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ABSTRACT

Compared were two samples of 173 and 95 aggressive and normal 5- to 8-year-old boys on measures of verbal and cognitive development. Aggressive boys were significantly lower than normal boys on nonverbal tests but not on verbal tests. The pattern of test performance which distinguished aggressive and normal was consistent with the hypothesis that aggressive boys were delayed in developing use of verbal mediation activity despite adequate language skills. A program titled "Think Aloud" was developed to teach use of verbal mediation activity in both social and nonsocial problem solving activity. Initial trials with 6 weeks of individual sessions with 12 second grade aggressive boys showed improved prosocial behavior and normalization of the cognitive test pattern in the treated boys. Two subsequent trials working with dyads of aggressive boys were less successful. In the final project, the Think Aloud program was taught to 19 public school teachers and results compared with a self-esteem program titled Great Expectations. Few significant differences were obtained between the programs. It was concluded that both Think Aloud and Great Expectations had beneficial effects on behavior and cognitive test performacne in young aggressive boys. (Appended materials include instructions for the classroom observation form and the manual for the Great Expectations program.) (Author/SBH)

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FINAL REPORT

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A PILOT STUDY OF VERBAL LEARNING IN YOUNG AGGRESSIVE BOYS

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Abstract

This project compared two samples of 173 and 95 aggressive and normal 5 to 8-year-old boys on measures of verbal and cognitive development. Aggressive boys were significantly lower than normal boys on nonverbal tests but not on verbal tests. The pattern of test performance which distinguished aggressive and normal was consistent with the hypothesis that aggressive boys were delayed in developing use of verbal mediation activity despite adequate language skills.

A program intitled "Think Aloud" was developed to teach use of verbal mediation activity in both social and nonsocial problem-solving activity. Initial trials with 6 weeks of individual sessions with 12 second-grade aggressive boys showed improved prosocial behavior and normalization of the cognitive test pattern in the treated boys. Two subsequent trials working with dyads of aggressive boys were less successful. In the final project the Think Aloud program was taught to 19 public school teachers and results compared with a self-esteem program entitled Great Expectations. Few significant differences were obtained between the programs. It was concluded that both Think Aloud and Great Expectations had beneficial effects on behavior and cognitive test performance in young aggressive boys.

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Chapter I

Introduction

Children with aggressive behavior problems are a major concern of parents, educators and mental health workers. The young aggressive child is at risk for development of serious educational problems (Feldhusen, Thurston & Benning, 1973), he constitutes the highest percentage of youngsters referred to child guidance clinics (Miller, 1972; Werry, Sprague, et al, 1975) and ultimately he has one of the poorest prognoses for satisfactory adjustment as an adult (Robins, 1966). Furthermore, despite the well-recognized need for service to these children, most efforts at treatment have not been overwhelmingly successful (Powers & Whitman, 1951; Tait & Hodges, 1962) even when combined with remedial reading as part of multiple services (Marmarole & Brown, 1974).

Traditionally, social and emotional factors have been emphasized in explanations of aggressive behavior disorders while cognitive and educational deficits have been considered to be secondary manifestations. For example, deficits in verbal abilities relative to nonverbal abilities have been observed repeatedly in juvenile delinquents and other children with aggressive or antisocial behavior problems (Camp, 1966; Prentice and Kelly, 1963). Likewise, reading retardation has been said to affect 90% of juvenile delinquents (Blom, 1973). Others (Graham & Kamano, 1959) have related reading retardation to deficits in verbal abilities. Because of attendance and cooperation problems, the lower educational skills and verbal abilities have often in turn been assumed to result from lack of educational exposure. More recently however, investigators have been considering different explanations. Prentice and Kelly (1963), for example, have suggested that the pattern of nonverbal abilities greater than verbal is more diagnostic of learning difficulties accompanying delinquency than of delinquency itself. Tarnapol (1970) has further suggested that the learning disabilities of delinquents result from minimal brain damage adding additional fuel to the arguments of those who wish to explain criminal behavior in terms of neurological dysfunction.

Despite the well-documented, widely recognized evidence of cognitive and educational deficits in adolescents and adults with aggressive behavior problems, there is very little information concerning the cognitive functioning and learning characteristics of these children at younger ages. It is not known, for example, whether young aggressive children even show a pattern of abilities similar to that observed in older. Although young aggressive children appear to furnish the pool from which later delinquents come (Glick, 1972; Farrington &

West, 1971), learning problems may not become characteristic of aggressive children until later (Conger & Miller, 1966; Kohn & Rosman, 1975) and the majority of children with learning problems do not develop behavior problems (Herjanic & Penick, 1972).

If the learning problems of aggressive children do, indeed, not develop until later elementary school years, there is hope that appropriate preventive programs could be developed. However, the type of preventive program would depend somewhat on the pattern of abilities observed in young aggressive children. For example, if young aggressive children have the same pattern of ability as older, it may be that learning tasks in the early grades do not stress their deficits enough to reveal the problem. On the other hand, abilities in young aggressive children may be no different from normal at an early age but develop, as disparity in educational experiences increases. A third alternative, and one which forms the basis for the present investigation, is that young aggressive boys do differ from normal at an early age but not in the same way that characterizes older children.

The basic hypothesis underlying the present project was that both the lack of verbal skills and the behavior problems in older aggressive children reflect an underlying deficiency in failure to develop the regulatory function of language during the early school years. In part this was based on the theoretical position of Luria and Vygotsky (cited in White, 1965) who view the directing and inhibiting functions of language as separate from the activating and social functions of speech, and later maturing. In their view, language readily serves an impulsive or activating function from an early age but the self-regulating function only develops as the child internalizes language somewhere in the age range 5 to 7 years. Razran (1961) has also emphasized that defective inner controls appear to require development of internalized linguistic tools.

Typically this function has been identified as verbal mediation activity or, in Jensen's words, "all mental processes that intervene between stimuli and responses when the relationship between these two sets of events cannot be attributed to simple associative processes. In most cases the intervening processes are conceived of as covert verbal responses to external stimulus situations; the verbalizations act in turn as stimuli for other responses." Current work on development of verbal mediation activities suggests that this function may be crucial for learning to read, for engaging in abstract thought (White, 1965, 1970), for

educational achievement (Jensen, 1966, 1971) and for learning control of impulsive behavior (Meichenbaum, 1975). Furthermore, the capacity to engage in verbal mediation activity appears to be highly dependent upon maturation (White, 1965, 1970) but other factors, presumably experiential, determine whether and how much a child will use this ability spontaneously (Jensen, 1966, 1971; White, 1965, 1970).

These considerations suggest that the poor verbal abilities and educational responses seen in older aggressive children may represent the end product of either deficiencies in development of verbal mediation skills or chronic failure to use verbal mediation in coping with social and educational experiences. Since this function does not normally become fully competent until around age 7, early school learning may not be as dependent upon it as later learning. Consequently associated learning deficits may not become evident until task demands shift more toward emphasis on abstract thought. Furthermore, an educational program delivered before deficits in mediational activity became critical for school learning might serve to prevent the later development of educational deficits.

To evaluate these hypotheses, it was necessary a) to determine what characteristics distinguished the cognitive functioning of young aggressive children and b) to determine whether poor verbal development was present from an early age. Jensen (1966) for example, has noted that language is necessary but not sufficient for development of verbal mediation activity. If young aggressive boys showed poor verbal ability similar to those of older ones, this could account for any delays observed in development of verbal mediation activity. It also seemed important to determine whether different types of aggressive children might have different patterns of cognitive functioning.

The first group of studies (Chapters 2-10) deals with determining whether different types of aggressive problems can be distinguished assessing the early relationship between social behavior and conceptual development, determining whether differences between young (age 5-8 years) aggressive boys and normal boys are characterized by verbal deficits similar to older children (age 12 and older), developing methodologies for measuring and assessing verbal mediation activity, and determining the cognitive pattern distinguishing aggressive and normal boys in the primary grades.

On the basis of findings from these preliminary studies, a cognitive behavior modification program to teach children

techniques of self-verbalization was developed and tested for effectiveness in altering cognitive functioning and behavior problems of aggressive children. These trials are reported in Chapters 11-13.

Each of the studies undertaken was either related to the specific questions addressed by the project or represented a spin-off from initial findings. Since later studies can be understood best as developments from earlier studies, they will each be presented in roughly the chronological order in which they were performed and as a complete report in itself.

Chapter II

A Survey of Relationships between Teacher Ratings of Behavior and Concept Development in Grades K-2

Bonnie W. Camp, William J. van Doorninck, Gaston E. Blom, Sara G. Zimet and Cynthia Rose

Introduction

The purpose of this study was to determine what relationship exists between teacher ratings of classroom behavior and performance on a test of basic concepts in the early grades. Data for this project was collected in the process of performing the study in Chapter III. It is reported first, however, because it provided a basis for evaluating characteristics of the population from which Chapter III children were drawn. Since we obtained information on large groups of children in regular classrooms on the teacher rating scales and on the Boehm Test of Basic Concepts, it seemed reasonable to examine these data for correlations between behavior disorders and performance on the basic concepts test. This should provide us with some gross information about differences in the correlation of these two measures with age and with different types of behavior problems.

Procedure

Teacher rating scales (School Behavior Check List) (Miller, 1972) were obtained on 995 children in grades K-2 from 10 Denver Public Schools. (The SBCL is described more fully in Chapter III.) These included at least one school from each quadrant in the city. All schools were integrated either by court order or included 30% minority enrollment. Teacher cooperation was solicited by presenting a mildly camouflaged proposal concerning the purposes of the study. This camouflage consisted of stating that we were interested in identifying children with behavior problems rather than detailing specific type of behavior problem.

A computer program was developed for scoring the SBCL with an output describing each child's profile in terms of T scores on each of the following scales: Low Need Achievement (LNA), Aggression (Agg), Anxiety, (Anx), Academic Disability (AD), Hostile Isolation (HI), Extraversion (Ext) and Total Deviant (Tot).

The Boehm Test of Basic Concepts was administered in a group setting to the entire class of each participating teacher. This test was routinely used in several of the schools and these results were used where available. In those schools which did not use the test routinely, the test

was administered by project staff.

Results

Differences between Schools

Means and standard deviations for each school on each scale of the SBCL were determined and an analysis of variance (ANOVA) was performed to determine whether schools differed. Differences among the schools were significant at the .01 level or better on low need achievement, aggression, hostile isolation, and total deviant. Differences between the schools were also significant on age, total Boehm score, quantitative score, and spatial score. In addition, eta squared was .23 to .25 for the Boehm scores. Since some schools were included which had only Kindergarten children, and the schools differed in age, however, the analysis was redone, excluding the Kindergarten. At this point, the low need achievement scores became nonsignificant. Table 1 shows average T scores for each school for the two age groups, 5 and 6 years of age, on the four scales where schools differed.

Differences between Aggressive Groups

Three Aggressive groups were formed by splitting the Aggressive scale at T scores 65 and 70. Children below 65 were considered Normal, those 65-69 borderline aggressive and those 70 and above aggressive. The three aggressive were then examined for differences on SBCL, Boehm scores and age. Table 2 presents the means along with the results of the ANOVA. The differences between the three aggressive groups are statistically significant on all measures reported in Table 2. It should be noted, however, that the mean scores for all groups are well within the average range except on the aggressive scale (used to separate them into aggressive groups). Furthermore, examination of histograms indicates that all groups overlap. Since it is often easy to demonstrate statistical difference for clinically insignificant differences with large numbers of subjects, it was concluded that these differences were probably not important.

Tables 3, 4 and 5 present correlations between the Boehm and SBCL scores by aggressive group and by age group. The overall correlations between Boehm and SBCL scores are nonsignificant or low. When broken down by aggressive groups, however, the normals and borderline aggressive groups continue to show small correlations between Boehm and SBCL, while the aggressive group shows statistically significant results (Table 3). Essentially we see from this table that aggressive children with anxiety or hostile isolation do worse on the Boehm, whereas extroverted aggressive children perform better. This is particularly interesting since the extraversion scale throughout all analyses shows essentially no correlation

with the Boehm scores. It suggests that this may be functioning as a suppressor variable and that further analysis of aggressive children might consider this possibility.

Age Variable

From Table 4, it is evident that correlations between Boehm and SBCL scores change with age. At the youngest age groups, low need achievement, anxiety, and academic disability are most highly correlated with performance on the concept test. By age 8, however, aggression and total deviant have become the most highly correlated with performance on the concept test, while anxiety is no longer significantly related. This is displayed in a different fashion in Table 5, which shows that correlations between the aggressive score on the SBCL and the Boehm go from essentially zero to a substantially significant -.34 at age 8. This suggests that at the earliest ages anxiety and low need achievement are most highly correlated with performance on the concepts test. As the child grows older, and perhaps as school experiences accumulate, the significance of these two gradually drops somewhat while the relationship with aggression becomes more pronounced. This may be an artifact of our sample (i.e. 8-year-olds in this sample are second-graders, some of whom were presumably repeating a grade), but it is consistent with previous results indicating a relationship between academic performance and aggressive behavior in older children.

Discussion

Since the Boehm is a highly verbal test, one might expect high correlations between scores on it and aggressive ratings if poor verbal abilities were characteristic of young aggressive children. The fact that significant correlations between aggressive rating and Boehm scores were obtained only for 8-year-olds was reassuring. This suggested that glaring deficits in verbal ability so characteristic of older aggressive children were probably not that evident in the younger children. This pointed favorably toward pursuing the question of whether verbal mediation activity is reduced in young aggressive children despite adequate verbal development.

Chapter III

Factor Analysis of the School Behavior Check List: Replication on Primary-aged Boys

William J. van Doorninck

Bonnie W. Camp

Introduction

A large number of School Behavior Check Lists (SBCLs) were collectedon kindergarten through second grade boys during the 1973-4 and 1974-5 school years to implement one of the larger objectives of the project. The large pool of SBCLs presented an opportunity to replicate the factor structure of the SBCL. A replication of the important scale has not yet appeared.

Rationale for the replication

Miller (1972) reported a factor analysis of an item pool of school behavior descriptions first factor-analyzed by Ross, Lacey and Parton (1965). The compelling feature of Miller's work was the normative information on each of the five behavioral factors and the one "academic disability" factor. The norms were based on the frequency with which 3,066 elementary school teachers in the Louisville, Kentucky area rated each of 96 behavior description on one female and one male picked at random from the classroom roster. Five thousand three hundred seventy three protocols were retained, after protocols containing three or more contradictions were removed. The normative population was described by Miller as representative of sex, IQ, and social class characteristics of the 1960 census figures for urban American populations.

A second notable feature of both Miller's SBCL and the Pittsburgh Adjustment Survey Scales for boys of Ross, et al., was the inclusion of so-called pro-social behaviors. These behaviors were desirable, constructive classroom behaviors. The inclusion of pro-social items was an attractive feature for raters, who sometimes resent the exclusive focus on negative behaviors.

The five behavioral factors reported in Miller (1972) for the SBCL represented a revision of the four behavioral factors of Ross, et al. (1965). Miller also added so-called "learning disability" items. Six SBCL factors resulted from a principal components factor analysis with unity in the diagonal and varimax rotation. There was no difference in factor structure as a function of sex. The SBCL factors are described below:

1. Low Need Achievement (LNA) (N=28): The positive pole of this scale contained most of the Ross, et al., pro-social items. Examples are "Volunteers to recite in class," and

"Finishes classroom assignments." The negative pole contained "learning disability" items added by mother. Examples are "Lacks ambition to do well in school," and "Distractible, can't concentrate."

2. Aggression (AGG) (N=36): The Ross, et al., aggressive and passive-aggressive factors collapsed onto this one factor. Examples are "Starts fighting over nothing," and "Finds fault with instructions given by adults."

3. Anxiety (ANX) (N=18): In addition to new items, the Ross, et al., withdrawal factor was included in this factor. Examples are "Prefers to be alone and play alone," and "Becomes frightened easily."

4. Academic Disability (AD) (N=8): This scale was unique in that proficiency in academic subjects was rated. An example is "Reading ability at least one grade level below age expectation."

5. Hostile Isolation (HI) (N=7): This new factor contained items such as "Never sticks up for self when picked on by other children," and "Does not take orders when other children are in charge." Miller interpreted these items as representing the "schizoid character."

6. Extraversion (EXT) (N=12): The items on this factor were a mixture of pro-social behaviors, such as "Is friendly," and boisterous, intrusive behaviors such as "Tries to be the center of attention."

The principal factor was LNA, on which 77 percent of the items loaded significantly. Miller interpreted this high percentage as an indication of a general teacher-rating factor; namely, most behavior is judged in relation to its relationship to academic achievements.

AGG and ANX accounted for the next most substantial proportions of item variance. LNA, AGG, and ANX appeared as factors whether the factor matrix was rotated to four, five or six factors. These three were interpreted by Miller (1972) as the "cross-validated factors from Ross, et al. (1965), as indicated in the above description of the SBCL factors. Miller (1972, page 137) constructed five behavioral factors and one academic factor, because these six "met the internal consistency and semantic homogeneity criterion described by Miller (1967...)..."

The fact is that the five "behavioral" factors were constructed with a high degree of overlap. The highest overlap occurs with EXT, where ten of its 12 items appear on other factors (eight EXT items had higher loading on AGG). Thus, the "semantic homogeneity" of the five behavioral factors should be challenged.

Theoretical structure of classroom behavior

Schaefer (1961) is one investigator who has attempted over the past decade to unify the factor analytic studies of behavior ratings. Schaefer has attempted to order a large number of possible behavior traits (each defined by a small number of checklist items) along two to four dimensions. The number of dimensions postulated for a given item population would depend on how completely that population represented the universe of classroom behaviors.

Schaefer (1971) reported consistent replication of two major dimensions of classroom behavior and three when descriptions of task-oriented behavior were included. These two (or three) major dimensions have been replicated across age groups (preschool through high school) and national groups (American, Dutch and German). The dimensions have been related to a theory of interpersonal perception and the meanings of descriptions in general (e.g., Osgood, Suci, and Tannenbaum, 1957). A description of the three bipolar dimensions and the theoretical traits defining them was taken from Schaefer (1971, page 152):

I. Task-Oriented Behavior. Perseverance, Conscientiousness, Attentiveness, Concentration, Methodicalness, Academic Seriousness, Achievement Orientation. The opposite pole typically shows loadings on Distractibility, Hyperactivity, and Inappropriate Talkativeness although these scales also show loadings on the factor of Hostility.

II. Hostility. This factor is well defined by Cruelty, Irritability, Resentfulness, Quarrelsomeness, Hostile Dominance, Covert Hostility, Suspiciousness, and Argumentativeness. Some of the Hostility scales tend to have loadings on Extraversion, and others have loadings on Introversion, which may be related to Ross, Lacey, and Parton's (1965) report of factors of Passive Aggressive Behavior and Aggressive Behavior. The opposite pole has been difficult to define, with the highest loadings for Considerateness. Kindness, as defined, typically has higher loadings on Extraversion (i.e., expressive, outgoing behavior).

III. Extraversion versus Introversion. Verbal Expressiveness, Gregariousness, Friendliness to Teacher, Cheerfulness versus Depression, Social Withdrawal, Submissiveness, Emotional Passivity, and Self-Consciousness.

Through the use of second-order factor analysis, primary factors can be plotted in two or three dimensions according to the above theoretical model. Schaefer (1971) reported plotting the first three components of the Ross, et al. (1965) factor analysis of classroom behaviors. The Pro-social factor fell in the center of a sector that included task-oriented behavior, extraverted behavior, and positive loving social behavior. Schaefer (1971, page 153) added:

The spherical configuration generated by Ross, Lacey, and Parton's three principal components was very similar to the three-dimensional configurations described above. Also, plotting the first three principal components of teachers' ratings provided by Digman (1965) revealed a similar configuration. These findings suggest that similar three-dimensional configurations can be found for comprehensive studies of classroom behavior despite differences in factors that are produced by different concepts and rotation of different numbers of factors.

Hypotheses

It is expected from Schaefer's (1971) analysis of the teacher rating scale literature that the present SBCL factors, when plotted configurationally, would align themselves in the following manner. AGG will be the best estimate of the Hostility pole. EXT will lie closer to Hostility but fall in a sector also defined by Negative task-orientation and Extraversion. LNA (if each pole was plotted separately) will define both poles of the task-orientation dimension. ANX will be the best estimate of the Introversion pole. HI will lie close to Introversion but fall in a sector also defined by Hostility and Negative task-orientation.

Method

Source of ratings. In the 1973-74 and 1974-75 school years, all boys in each of 64 and 85 classrooms, respectively, in the Denver Public Schools were rated by their homeroom teachers with the SBCL. Ratings were made between mid-October and January of the school year. Only first and second grade classrooms were used in this study. No child appeared in both samples.

The rating of all boys in a given classroom represents a major departure from the Ross, *et al*. (1965) and the Miller (1972) random sampling of one child of each sex per teacher.

The absence of ratings on girls was not considered important to the outcome of the current analyses. Miller (1975) reported no sex differences in factor structure. The restriction of age range to first and second graders was also not considered important. Previous studies (Miller, 1972; Ross, *et al*. 1975) on these items showed no change in the average of behavior rating frequencies with increasing grade level.

The potentially important methodological change was in the use of multiple ratings by the same teacher in this investigation. Both Miller (1972) and Ross, *et al*. (1965) required the rating of only one boy and one girl from each teacher. If factor structure were to be altered by multiple rating it would likely be in the direction of spuriously increased interitem correlations and a less equitable distribution of accountable variance over extracted factors. The

test of this potential methodological effect was to compare the distributions of variance in the Miller (1972) and present analyses.

Subjects. The complete SBCL ratings were divided into two samples, so that two independent estimates of factor structure could be made. The 1973-74 sample consisted of 631 SBCLs. The 1974-75 sample consisted of 786 SBCLs. Rated boys in each sample ranged in age from six years, one month to seven years, three months (mean = 7 years, one month).

Factor Analysis. Each sample of item ratings was submitted to a principal components factor analysis with varimax orthogonal rotation (Kaiser, 1958). The same factor analytic procedure was used by Miller (1972). Because of local computer program characteristics, the number of variables (items) had to be limited to 90. Therefore, all Academic Disability items (n=8) were eliminated, because their reference to academic achievement obviously separated them from other behaviors and little new information was likely from any analysis of them. A total of 88 behavioral items were factor analyzed. The current study employed the Guttman-Kaiser-Dickman ("root-one") criterion (Horn, 1965) for determining the number of factors to be rotated.

The root-one criterion qualified 14 to 15 factors for rotation, many more than the five behavioral factors found by Miller (1972). Thus, a second set of analyses rotated to the five factors accounting for the most variance, so that further comparisons to Miller's analysis will be made.

Results

The first analyses to be reported are the series of two five-factor analyses on the two independent samples. Each analysis produced factors nearly identical in item content to Miller's (1972) behavioral factors (LNA, AGG, ANX, HI and EXT).

Table 1 shows the unrotated percent of variance accounted for by

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Table 6 about here

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the five strongest factors. Table 1 also shows the percent of variance values for the five behavioral factors from Miller (1972). Although the order of the variance-accounted-for values changed, the value curves from the Miller and present analyses were highly similar. Further, the total variance accounted for in the Miller (1972), Ross, et al. (1965) and present analyses are quite comparable. Because the distribution of variance was not restricted with the present five-factor rotations, it is likely that the use of multiple ratings per teacher in the present study did not restrict factor formation.

When simple structure was the criterion, the LNA factor was as unitary-looking in the present five-factor analyses as it was in Miller's. The item content and unambiguous loadings of these items on LNA represented a clear-cut replication of Miller's LNA factor. AGG, EXT, HI and ANX were more complex in the present five-factor analyses than in Miller's because many more items loading on these factors had substantial loadings on other factors.

AGG was a major factor but was not clearly separated from EXT in either sample. In each analysis, the majority of items loading on the EXT factor had higher loadings on AGG. This was true of Miller's analysis. In the present analyses, the eight EXT items loading exclusively on EXT defined a boisterous, disruptive, attention-seeking hyperactive syndrome. As hypothesized, EXT seemed clearly aligned with a larger hostile-aggressive dimension and not an assertive, friendly, gregariousness dimension.

HI was complex in each of the present five-factor analyses but unitary-looking in Miller's analysis. The exclusive loadings on HI defined a submissiveness vs. standing-up-for-oneself syndrome. Other HI items were more clearly aligned with AGG and LNA. This finding suggested that Miller's HI was a complex Introversion factor with some items aligned both with a larger hostility dimension and others aligned with negative task-orientation.

ANX was also complex in each of the present five-factor analyses. About one-third of Miller's ANX items loaded either on LNA or HI. A subset of Miller's ANX items loaded both on the present ANX and HI factors. This subset defined a social withdrawal syndrome. The items loading exclusively on the present ANX factor defined a fear-fulness, self-consciousness syndrome. Both of these syndromes as well as submissiveness above, might be subsumed under a larger introversion dimension.

Between 14 and 15 factors were thereby rotated, when the root-one criterion was employed. Interpretation of singlets and doublets was avoided by combining each with a larger factor having the next highest loading. Eight factors remained in each of root-one analyses.

Improved semantic homogeneity was achieved with Miller's ANX and HI factors. Three distinct factors emerged, each displaying a high degree simple structure. The first was a withdrawal or isolation factor (N = 3; Prefers to be alone and play alone; Prefers to be around adults, rather than play with children; Just sits around on the playground). The second was a submissiveness factor (n = 4; Never sticks up for self when picked on by other children; Never speaks up even when there is cause to be angry; and so on). The third was a self-consciousness or fearfulness factor (n = 11; Becomes frightened easily; Is afraid of making mistakes; and so on).

The relationship between Miller's EXT and AGG factors was also clarified. In the present root-one analyses, there was evidence for three aggression factors, but they were unstable. In the 1973-74 sample, the root-one analyses produced an aggression factor with both attention-seeking items and belligerence items. A separate aggression factor emerged consisting of irritability items. The attention-seeking items (n = 7) included "Interrupts whoever is speaking," "Never seems to be still for a moment," "Likes an audience all the time," and so on. The belligerence items (n = 17) included "Fights with smaller children," "Tries to get other children in trouble," "Does things to get others angry," and so on. The irritability items (n = 12) included "Is infuriated by any form of discipline," "When angry, will refuse to speak to any one," "Does not forget things which anger her/him," and so on.

In the 1974-75 sample, the root-one analyses produced a separate attention-seeking factor, but the belligerence and irritability items appeared on the same factor. Thus, Miller's EXT factor was not distinguished from AGG in a unitary and reliable manner, considering each root-one analysis on separate samples.

Miller's LNA factor was not only replicated in the upper-scree analyses but also in the root-one analyses. The factor was bipolar and highly unitary. The positive task-orientation pole included items such as "Finishes classroom assignments," "Is able to concentrate on things," "Is alert in class," and so on. The negative task-orientation pole included items such as "Tends to give up if has something hard to finish," "Lacks ambition to do well in school," "School performance is far below capabilities," and so on.

A complex bipolar factor with a low degree of simple structure emerged in the root-one analyses. The items had minor loadings on the EXT and AGG factors in Miller's analysis and on each of the major factors in the present five-factor analyses. In the root-one analyses, these items defined a cheerfulness factor (n = 8; Able to see the bright side of things; Popular with classmates; Seems as happy as most children; and their polar opposites). In the root-one analyses, most items also had minor loadings on the irritability, task-orientation and self-consciousness factors. Table 7 shows the item content of the stable factors.

A second-order factor analysis is now being done on the 15 primaries of the 1973-74 root-one analysis. Because AGG, LNA and ANX were the major dimensions of this analysis, the second-order will be rotated to three second-order factors. The primaries will be plotted three-dimensionally onto the three second-order factors. The hypotheses stated above should be confirmed regarding the location of the better defined hostility and introversion factors. LNA should stand as a separate dimension. Cheerfulness, the new hybrid, should fall in a sector defined by Extraversion, Love and Positive task-orientation, just as the pro-social items in the Ross, et al. (1965) scale did when plotted configurationally by Schaefer (1971).

Conclusions

These results suggest that the SBCL classroom behavior items can be structured along three major dimensions. The first was a bipolar task-orientation dimension represented by LNA in Miller's analysis and a similar factor with nearly identical item content in the present five-factor upper-scree and root-one analyses. This task-orientation factor is most unitary and stable across analyses.

The second dimension was a hostility one represented by AGG and EXT in Miller's analysis and the present five-factor analyses. The hostility dimension tended to be represented across analyses (Miller's, present five-factor and root-one) by a major factor and a minor factor whose items had significant loadings on the major. The root-one analyses, taken together indicated three psychometrically definable clusters with identifiable semantic differences (irritability, attention-seeking, and belligerence). But these clusters evidently had a "small distance" from one another in the "perceptual space" of the teachers, because the three readily collapsed onto one or another with changes in sample and factoring criteria.

The third dimension was an introversion one represented by ANX and HI in Miller's analysis and the present upper-scree analyses. With the root-one analyses, Miller's ANX and HI separated clearly into three unitary factors (submissiveness, self-consciousness, and withdrawal).

A cheerfulness factor emerged in the present root-one analyses that did not fit into the above three dimensions. Because its items tended to cross-load on one or another of the above three, it is likely that this factor represents a composite of the positive poles of the three major dimensions.

Chapter IV

Investigations of distinctions between passive-aggressive and hyper-aggressive children.

Sara G. Zimet, Gaston E. Blom, Cynthia Rose, & W. J. van Doorninck

Although preliminary data obtained prior to initiation of the project suggested that distinction between passive-aggressive and hyper-aggressive children might not be practical, there was some feeling that the distinctions were nevertheless real and should be pursued if possible. However, a time limit of 6 months was placed on this line of investigation to determine the fruitfulness of pursuing this question further.

One approach consisted of asking teachers to characterize children according to how well they met operational descriptions developed for hyper-aggressive, passive-aggressive, withdrawn or assertive-aggressive profiles. Using children categorized in this fashion, an effort was then made to select items from the SBCL that would differentiate among the categories. Items so selected were then applied to populations of children from several special schools dealing with emotionally-disturbed, learning-disabled or chronically ill children. Differences between these populations were quite large, however, so that results could not be combined. As in the larger studies also, much overlap between passive-aggressive and hyper-aggressive items were found.

After careful review of available results, the group decided that perhaps children being identified as passive-aggressive were primarily nonresponsive children who were resistant to academic stimulation or had low arousal.

Another approach involved performing interviews with teachers in the Day Care Center, a day treatment center for emotionally-disturbed children at the University of Colorado Medical School, to obtain information about teacher and child interactions. However, too much time involvement, lack of specificity in interview goals and difficulty in correlating interviews with each other and with check list information led to the decision to put this process aside.

After thorough review of literature relative to the issue of identifying passive-aggressive children and concerted attempts to achieve a useable distinction, the group decided to abandon this line of investigation as impractical.

Chapter V

Additional Approaches Abandoned as Unfruitful

Bonnie W. Camp, Sara G. Zimet, G. E. Blom, W. J. van Doorninck, & F. W. Hebert

Evaluating Verbal Deficits in a Group of Emotionally-Disturbed Children

Tests administered to children obtained from the Public Schools described in Chapter II were also administered to 22 children enrolled in the Day Care Center and School for Emotionally Disturbed Children at the University of Colorado Medical Center. No pattern of verbal deficit was identified in this group.

Evaluation of a New Test of Auditory Discrimination

Dissatisfaction with the Wepman Test of Auditory Discrimination (Wepman, 1958) led to a search for a better instrument which might be used in subsequent studies. Initial exploration of Aten's new test was undertaken by comparing performance on the Wepman and the Aten in the previously mentioned group of emotionally-disturbed children. There was essentially no relationship between the two tests in this group. Because of time and equipment demands associated with Aten's test, this was not pursued.

Further Studies of SBCL Scores in Relationship to Basic Concepts Test Scores

The significant correlations between Boehm Test scores and Extraversion score in the aggressive group suggested that further breakdown according to extraversion scores might prove fruitful. Item analysis indicated that all but four or five items on the extraversion scale were included in the Aggressive scale but further efforts to break down the group on the basis of extraversion scores produced no meaningful pattern for either Boehm Test results on the entire population or for other test results in the smaller population considered in Chapter VI.

Measures of Nonverbal Control

The issue of whether measures of nonverbal inner controls could be developed was pursued in various forms. After evaluating literature on conditioned inhibition and scrutinizing a number of situations offered as demonstrating nonverbal control, we concluded that we had no effective means of insuring that verbal controls were not being used in any situation where control might be demonstrated. Consequently we decided to concentrate on distinguishing between control and the lack of it rather than between presumed different types of control.

Verbal Abilities in Young Aggressive Boys*

Bonnie W. Camp, Sara G. Zimet, William J. van Doorninck,
& Nancy W. Dahlem

Studies of cognitive abilities in delinquents have repeatedly demonstrated a deficit in verbal abilities relative to nonverbal abilities (Camp, 1966; Prentice & Kelly, 1963). Academic deficiencies, also common in this group, have been related to this pattern of lower verbal ability (Graham & Kamano, 1958). There is however, some question about how the relationship between low verbal ability and academic deficiency develops and what it represents.

A number of studies indicate that the presence of aggressive behavior problems in the early school years is highly related to later delinquency (Conger & Miller, 1966; Glick, 1972 a,b) and that many similarities in behavior and cognitive functioning exist between young aggressive and older delinquent boys (Farrington & West, 1971). However, whereas aggressive problems at school entrance may be predictive of later delinquency, academic difficulty does not become predictive of later delinquency until grades 4 to 6 (Conger & Miller, 1966). This suggests that significant problems with school learning develop later in the school career of aggressive boys. If true, it could also mean that the verbal deficit so characteristic of delinquents only develops as the child gets older. Alternatively, verbal development may actually be delayed in aggressive boys but the impact of this delay on school learning may not be recognized until later.

Answers to questions regarding the status of verbal development in young aggressive boys may be important for a number of reasons. First, children with delays in language development often have later learning problems (Athey, 1971). Secondly, even if verbal development is not delayed, difficulties with learning may arise from failure to develop skill in the mediational use of language. Jensen (1966, 1971), for example, has presented persuasive arguments regarding the dependence of educational potential on developing this skill. As described by Jensen (1971) mediation "refers to all mental processes that intervene between stimuli and responses when the relationship between these two sets of events cannot be attributed to simple associative processes. In most cases the intervening processes are conceived of as covert verbal responses to external stimulus situations; the verbalizations act in turn as stimuli for other responses".

A child's development of self-control may also be dependent upon his verbal mediation activity. Current theories regarding development of self-control (Meichenbaum, 1975) place great emphasis upon the mediational use of language as a key

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feature in developing impulse control.

Since older children with aggressive behavior problems appear to have significant difficulty with both impulse control and school learning, it seems reasonable to consider the possibility that both of these problems reflect some failure in developing and utilizing verbal mediation strategies in coping with their environment. However, as described previously, they tend to be generally deficient in verbal functioning. Jensen (1966) has noted that language may develop without a corresponding development of verbal mediation processes; but the reverse never seems to occur. If young aggressive boys also show delays in verbal development, any delay in development of mediational skill could be attributed to the delayed language. Consequently as a first step in examining the verbal functioning of young aggressive boys it seemed important to determine how they compared with normal boys in performance on a variety of verbal tasks. The present study was designed for this purpose.

Method

Subjects

Subjects consisted of 194 kindergarten, first- and second-grade boys from 10 Denver Public Schools scattered geographically throughout the city. Between mid-October 1973 and January 1974, Miller's (1972) School Behavior Check List (SBCL) was obtained on 994 boys from 52 classrooms by asking teachers to complete the check list on all boys in their classes.

The SBCL is an inventory of 96 behaviors observable in a school setting. It was developed to obtain teacher ratings of deviant behavior in children between the ages of 3 and 12. In addition to a total score, the following six scales were factored out: Aggression, Anxiety, Academic Disability (7 to 12 year olds), Cognitive Disability (3 to 6 year olds), Hostile Isolation and Extroversion. Miller found that a T score of 65 (1.5 SD above the mean) on the Total Deviant scale provided the best distinction between boys referred to mental health services and those not referred. To increase confidence in defining an Aggressive group in the present study, a T score of 70 (+ 2 SD) based on Miller's norms was selected as the minimum score for inclusion in the Aggressive group. In the total sample of 994, there were 133 boys with a T score ≥ 70 on the Aggressive scale. Of these, parent permission was obtained for testing on 84 and all were included in the project.

Permission for testing was received for 294 of the 515 boys who were identified as Normal on the SBCL (no scale with a T score more than 1 SD above the mean). As each Aggressive boy was selected, a Normal boy was selected at random from those in the same age range, school and census tract of residence. A total of 99 Normal boys were tested.

Miller (1972) noted that all types of deviant behavior increase sharply as the IQ drops below 90. As a result, we considered the possibility that the over-all IQ in Aggressive boys might be lower than in controls and verbal abilities could also be lower as a result. To evaluate differences in Aggressive and Normal boys with average intelligence, a subsample was created of children with Performance IQ's 90 and above. There were 71 pairs of Aggressive and Normal boys with PIQ's 90 or above[1]. Each child was also assigned an SES score based on his census tract of residence. This score was derived by applying the method described by the U.S. Census Bureau (1963) to the 1970 Census data on education, income and occupation for each census tract in Denver.

Tests Administered

The Wechsler Intelligence Scale for Children (Wechsler, 1949) and the Illinois Test of Psycholinguistic Abilities (Kirk, Kirk & McCarthy, 1968) are the two major instruments which might be expected to yield information pertinent to the question of both verbal and nonverbal functioning in the present groups. However, administering the complete forms of both of these tests represented a large amount of testing time. To give these in their entirety would have made it impossible to utilize any other measures which might yield some insight into verbal mediation activity. Consequently, we decided to obtain a nonverbal IQ by administering only those WISC Performance tests which Cohen (1959) found to be most highly loaded with g at the youngest age level and which factored together as the major factor contained in the Performance Scale. These were Block Design, Object Assembly and Mazes. From the WISC Verbal Scale, we selected those tests which comprised Cohen's major factor in the Verbal Scale. These were Information, Comprehension, Similarities and Vocabulary. Because the verbal tests selected from the WISC were factorially similar to a number of ITPA tests (Proger, Mann, Bayuk, Burger, Cross & Green, 1973), we selected ITPA subtests that did not duplicate WISC subtests but seemed to represent different factors. The ITPA subtests included were Auditory Reception, Visual Memory, Visual Association, Verbal Expression and Grammatic Closure.

This then allowed us to add some measures of learning achievement and concept mastery as described below.

Boehm Test of Basic Concepts (BTBC)(BOEHM, 1967). Based on an analysis of primary curriculum materials, this test assesses the child's ability to recognize pictorial representation of verbal concepts needed by the child in following directions at this level. This was selected because it is a content-referenced test with manifestly verbal material relevant to early academic performance.

Wide Range Achievement Test (Jastak & Jastak, 1965). The Reading portion of this test was utilized for a rapid estimate of achievement in this area in order to determine whether the specific relationship between reading deficits and aggressive behavior problems could be detected in our young subjects.

Paired Associate (PA) and Serial Learning (SL). These were exploratory tasks utilizing pictures depicting objects well within the vocabulary of young children. These were selected because they involved learning verbal responses either as a series of associations or in a sequential order and because both tasks have been found more difficult for retarded readers.

The PA task consisted of three anticipation trials with ten pairs of pictures in which the child was shown one picture and asked to tell the name of the other picture that went with it. The SL task consisted of ten pictures presented in a standard temporal order. The child had to anticpate the next picture in the order and trials continued until he had one perfect trial. These tasks are described more fully in Camp and Dahlem (1975).

Kendler Optional Shift (Kendler, Kendler, & Learnard, 1962). The literature proposes that ease of reversal in learning a visual discrimination problem is related to spontaneous insertion of linguistic symbols between the visual stimulus and the motor response. This task was selected because it was hypothesized that this procedure might show a difference in the tendency to employ such verbal mediation even if verbal abilities did not differentiate the two groups.

Wepman Test of Auditory Discrimination (Wepman, 1966). Deutsch (1967) found that older, disadvantaged, retarded readers had poorer auditory discrimination ability than good readers. This test was chosen to assess whether deficits in verbal abilities might be related to poor auditory discrimination.

Procedure

SBCL's were obtained from teachers between October 1973 and January 1974. The BTBC was given to the entire class within two weeks of the time SBCL's were completed on the boys. With minor variations, individual tests were performed between November and April in three sessions of approximately one hour each. Session I consisted of the subtests of the WISC (Performance tests followed by Verbal). Session II contained the ITPA subtests. Session III included the WRAT, Wepman, PA and SL learning and Kendler optional shift. Each session was administered by a different examiner. Two examiners for Sessions I and II were counter-balanced. One of three different examiners was assigned at random to each child for Session III.

Results

Where possible, data analysis was performed on all subjects and on the subsample of children with IQ's 90 and above. Because results were very similar in all instances only the analyses on the children with normal intelligence will be presented. SES scores did not differ significantly between Aggressive groups or among age groups. Aggressives and Normals did differ on SBCL scores other than the Aggressive scale. However, mean scores on other scales were within one SD of the mean and differences were considered to reflect the fact that Normal boys were selected to have no scores above 60.

Table 8 presents means for results of each test in Aggressive and Normal groups at each age along with results of a repeated measure analysis of variance for Age x Aggression Group on each variable.

In all instances where significant differences were observed between Aggressives and Normals, Normals were superior. The majority of tests used to assess verbal ability failed to show significant differences between the groups. Notable exceptions were WISC Information and Similarities and ITPA Auditory Reception and Grammatic Closure. The groups also differed on WRAT reading level. Further, despite elimination of children with PIQ's below 90, Normals were significantly superior to Aggressives on two of the three WISC Performance measures and on PIQ. Although differences between the groups in VIQ were not large enough to be significant, the Performance Scale differences were enough to produce differences in Full Scale IQ.

Age differences were present but confined to test scores which had not been standardized by age. The interaction between Age and Aggressive group was significant for Object Assembly and Auditory Reception. The pattern of this interaction for Auditory Reception is displayed graphically in Figure 1. Analysis of simple effects of group status at each age level showed that differences between Aggressives and Normals were not significant at the youngest age level but were significant at the 77-88 month level, F (1, 68) = 6.412, $p < .05$) and the $>$ 89 month level, F (1, 68) = 15.399, $p < .01$. From Figure 1, the interaction appears to form a progressive drop in scaled score for Aggressive boys as Age increased while scores of Normal boys remained close to average. Though a significant interaction was not observed for Grammatic Closure, the pattern of scores was similar.

Despite the few significant differences between Aggressives and Normals on univariate analyses, the pattern of scores for each individual child could be consistently quite different in the two groups. To evaluate this possibility, a stepwise discriminant analysis was performed on the data for the two matched groups. Maximum separation between the groups was

achieved in the first 10 steps and the discriminant function was significant, F (10, 130) = 3.526, $p < .01$. Despite the significant results, however, misclassification was still rather high (18/70 Aggressive and 22/71 Normals). Since most of the results were also redundant with information presented in Table 8, details of this analysis will not be reported here. However, an interesting pattern of positive and negative coefficients was observed for those tests which contributed to the 10-step discriminant function analysis. As expected, coefficients of scores on Information, Performance IQ, Auditory Reception, WRAT, Similarities and Visual Memory were weighted in the direction favoring classification as Normal. However, coefficients for scores on Verbal Expression, BTBC, mediational choices on the Kendler optional shift, and low error rates on paired-associate learning favored classification in the Aggressive group. These results suggested that even though no significant differences favoring Aggressives were obtained in the univariate analyses, they might nevertheless have a slight edge over Normals in some verbal activities.

Discussion

Aggressive boys were found to be significantly inferior to Normals on a few verbal tests; but differences between the two groups were too limited to support the conclusion that Aggressive boys were generally deficient in verbal abilities. More suprisingly, Aggressive boys were significantly inferior in nonverbal ability. Because of the way in which these tests were selected, present results with the WISC are not strictly comparable with those obtained from using the complete test with older delinquent boys. Nevertheless, judging by available information, verbal abilities in young Aggressive boys appear to be more comparable to their Normal peers than is the case with older delinquents.

Since young Aggressive boys did not seem to be characterized by generalized deficiencies in verbal development, we were encouraged to evaluate the results in light of questions regarding mediational activity. At first glance, there seemed to be little information pertinent to the question of whether the groups differed in this regard. Results from the one procedure (optional shift) which we thought would have the most bearing on this question had to be discounted. In the process of administering the procedure it became evident that a number of children, as revealed in their elaborate verbalizations and labeling, made the task into an unnecessarily complicated one.

However, Jensen's (1966) analysis of ways in which mediational deficiency are displayed suggested that mediational deficiency might indeed explain the difference between the two groups on nonverbal tests. Jensen noted that individuals who

have a high threshold for arousal of mediational activity will be most handicapped in solving problems which require verbal mediation but are ostensibly "nonverbal". He explains this apparent paradox by suggesting that for some individuals verbal behavior is not aroused by the task unless the problem is posed verbally. In such instances, "the subject tries to solve the problem on the perceptual level, and for more difficult problems this approach is totally ineffective" (1966).

A similar explanation could also be given regarding why Normals were superior on some verbal tests and not on others. White (1965, 1970) has suggested that the transition from immature thought processes to mature processes involves use of verbal mediation to inhibit associative responding and to reason through to a solution.

Some types of verbal problems make greater demands for suppression of associative responding than others. And some which ostensibly require reasoning may actually be solved successfully by association in a high percentage of cases (Achenbach, 1970). Perhaps tests such as Information, Auditory Reception and Similarities, on which Normals were superior, require structured recall and reasoning. If Aggressive boys tend to respond associatively they would be more handicapped on these tests than on tests such as Vocabulary, Verbal Expression or Comprehension where verbalizing associations may lead to acceptable scores.

Since most children in the early grades are presumably making the transition from immature "associative" processing to more mature "cognitive" processing (White, 1965), the aggressive boys' continued reliance on associative processing would not interfere with learning in the early grades as much as it would later on when most children have completed the transition.

This analysis is admittedly speculative at this point and must await further research for verification. If correct, however, it would suggest that later educational retardation might be prevented through programs specifically designed to help children increase their spontaneous use of verbal mediation.

Footnote

[1]To achieve equal numbers in the two groups, the 13 Aggressive boys with PIQ's below 90 were eliminated along with their controls. An additional fifteen Normal boys with PIQ's below 90 were eliminated and a replacement selected at random from Normal boys in the same age group and census tract, hence the disparity in numbers of Aggressive and Normal boys eliminated.

Summary

Academic failure and poor verbal abilities are commonplace in older children with aggressive behavior problems. The present study addressed the question of whether a similar pattern would be observed in young aggressive boys. A variety of verbal and nonverbal abilities were examined in 71 pairs of Aggressive and Normal boys in kindergarten through second grade. Significant differences favoring Normals were observed on WISC Information, Similarities, Block Design, Mazes, Performance IQ and Full Scale IQ; ITPA Auditory Reception and Grammatic Closure; and WRAT reading. Results did not indicate a generalized deficit in verbal development among young aggressive boys. However, findings supported the interpretation that some deficit in mediational use of verbal ability may be present in Aggressive boys.

Chapter VII

Optional Shift and Response Inhibition

Bonnie W. Camp & Mary Ann Simmons Bash

This study examined the relationship among two types of optional shift tasks and a task reflecting the child's ability to inhibit responding to a signal. The Kendlers (Kendler, 1972) have argued eloquently that intradimensional shifts in a discrimination learning paradigm reflect the existence of verbal mediational activity. Controversy regarding this interpretation for optional shift has, however, led some, e.g. Flavell (1966) to seek explanations of observed phenomena in terms of production deficiency. The Kendlers (Kendler, 1972) have also described both production errors (child responds consistently with the response indicating mediation but fails to verbalize correctly) and control errors (child fails to respond consistently with mediation despite ability to verbalize correct mediating response).

Theoretically, the development of mediational ability has been linked to the development of private speech and the ability to regulate behavior through language (Meichenbaum, 1975; White, 1965, 1970). If, as hypothesized by Kendler (1972), choice of an intradimensional shift on the optional shift task reflects the presence of mediational activity and if ability to inhibit responding also reflects mediational activity, one would expect children who are mediators on the optional shift procedure to perform better on a task requiring inhibition.

Our initial study of verbal ability in young aggressive boys failed to confirm expectations regarding the relationship between mediational activity as reflected in the optional shift task and measures of verbal activity. In part this seemed to result from the fact that many children, especially very good readers, developed elaborate verbal explanations which unnecessarily complicated the problem and led to performance inconsistent with mediation as defined by the experimenter. This seemed to involve at least two aspects of construct validity regarding the optional shift procedure as a measure of mediational activity. One aspect concerned whether the different types of optional shift procedures measure similar things. If performance on two such procedures is highly correlated, this would represent support for the concept that performance on both reflects mediational activity. If, however, they are essentially uncorrelated one would feel less confident concluding that performance on either represents a generalized trait.

The other concern had to do with whether mediational

activity measured by the optional shift procedure represented the type of mediational activity involved in developing and maintaining cognitive control or inhibition. Even if the Kendlers are correct in interpreting intradimensional shifts as evidence of verbal mediation, this might not be the same type of mediational activity thought to be involved in developing self-regulation. If, however, children who are mediators on the optional shift procedure should perform better in a task requiring inhibition, this would represent support for the concept of a common process. Further, unless some relationship between self-regulation and mediational measures were obtained, the concept that mediational activity and behavior control are related in aggressive children would be difficult to support.

The following project was developed to answer two of these questions, namely, whether two different forms of the optional shift procedure were measuring the same thing in young children and whether performance on either or both optional shift procedures was related to performance on a task requiring inhibition.

Method

Subjects

Subjects were 92 kindergarten and first- and second-grade boys drawn from Denver Public Schools. These were normal children randomly assigned to this project from a general pool of normal children available for testing. Results of the School Behavior Checklist (SBCL) (Miller, 1972) and the Boehm Test of Basic Concepts (Boehm, 1971) were available on all children. Children identified as hyperaggressive on the SBCL were not included in the sample. Each child was tested in a quiet room in his school by one of three examiners.

Tests

Optional Shift. Two forms of an optional shift task were employed: One was modeled on the size-brightness problem originally described by Kendler, Kendler, and Learnard (1962). This will be referred to as KK. Previous work with an older group of poor readers had shown an appreciable spread in difficulty of learning the four possible choices. For the present study, the two most difficult problems, i.e. those identified as most often followed by extradimensional shift choices (small, white), were used as the initial problem followed by a second problem. Children were randomly assigned to receive either small or white as the initial problem and these, in turn, were randomly paired with all possible second problems.

The second optional shift task was modeled on the procedure described by Kendler (1972) which utilizes attachment of labels to shapes reminiscent of Chinese characters in the first

problem. It was believed that this might be easier since the procedure involves attaching overt labels to the "Chinese" characters then looking at responses consistent with transfer of these labels to a motor response. This task will be referred to as CK.

Each optional shift task was terminated if a child had not achieved criterion on the first problem within 60 trials.

Scores on the optional shift tasks consisted of the number of trials to criterion on Problem 1 and number of responses consistent with mediation on the third problem, the number of non-test-trial errors, the number of "production errors" and the number of "control errors" as defined by Kendler (1972). Mediation was defined as 8 or more test-trial choices consistent with an intradimensional shift. Production errors were defined as failure to verbalize an intradimensional choice despite responses consistent with mediation. Control errors were defined as responses consistent with an extradimensional shift while verbalizing a choice consistent with intradimensional shift.

Inhibition. Ability to inhibit responding was measured using the Simon Says Game as described by Strommen (1973). In this game, the child is instructed to perform an action when the command is preceded by "Simon Says" but not to perform the action if the command is not preceded by Simon Says. Each child received liberal preliminary practice followed by 20 trials equally divided into performance and inhibitory trials presented in a random order. Two randomized sequences were developed and each child was assigned at random to one of these.

Performance on Simon Says was scored for the number of performance errors and number of nonperformance errors in the first 10 trials, the second 10 trials and total trials.

Procedure. Each child was tested individually in a quiet room at his school. Six orders of test presentation were devised to provide complete counterbalancing of order effects and children were assigned randomly to each battery.

Results

Means and standard deviations for scores on the two optional shift procedures and the Simon Says Game are presented in Tables 9 and 10. Preliminary data analysis showed no effects attributable to age of the child or order of test presentation. Consequently these variables were dropped from further consideration.

Comparison of different types of optional shift. As

expected, children showed significantly fewer mediating responses on the optional shift using size and brightness problems (KK) than the procedure utilizing "Chinese-like" characters (CK) t (80) = 2.2, p <.04. In addition, there were significantly more production errors, t (60) = 3.113, p <.01, on the task employing Chinese-like characters while control errors were essentially the same for the two procedures. With one exception, nontest trial errors vs. control errors on the size-brightness task (r=.18), correlations between the two procedures were nonsignificant. These correlations are presented in Table 11.

Simon Says. Consistent with Strommen's report, there were significantly more nonperformance than performance errors in this task, t (80) = 7.20, p <.01.

Several ways of grouping performance on the optional shift task were also tried. Initially each child was classified as "mediating both tasks", "nonmediating both tasks", "mediating CK only", "mediating KK only". Mean scores for these groups are presented in Table 12.

Forty-one children (50%) showed mediation on both optional shift procedures and 13 (14%) were classified as nonmediators. Of the 37 children who were classified as mediators on only one procedure, 23 were mediators on CK alone and 14 were classified as mediators on the KK size-brightness task alone. Thus a total of 64/92 boys were mediators on the CK while 55/92 showed mediation on the KK. Along with significant differences between mean scores on the two procedures, this indicated that KK was generally more difficult. Perhaps this difference in difficulty contributed to the low correlations between the two procedures.

Comparison of optional shift and Simon Says. None of the correlations between performance on the optional shift task and Simon Says were significantly different from zero.

During the Simon Says task, records were maintained of all verbalizations. Since the private self-guiding speech has been considered an important manifestation of verbal mediation (Jensen, 1966; Meichenbaum, 1975) it also seemed reasonable to examine the relationship between pre-performance verbalization and optional shift performance.

Results of this analysis were equivocal. One child's verbalizations could reasonably be interpreted as nonmediating or as a highly telegraphic mediating response. When he was grouped as evidencing nonmediating verbalization, there were 21 children who pre-verbalized and showed mediation on KK and 5 who were nonmediators or showed mediation on CK alone. Of

the 65 nonverbalizers, 35 were mediators on KK or both CK and KK.

Discussion

Although this study provided weak support for a relationship between classification as mediating on the optional shift procedure and a more direct measure of verbal self-guidance, the overall results discouraged the continued use of the optional shift task as a measure of verbal mediation. The suggestion that mediation might be dependent upon task difficulty and failure of findings with the optional shift procedure to meet construct validity expectations argued against further use of this procedure as a measure of verbal mediation. It was concluded that a more direct measure of verbal mediation activity should be developed if possible. The next chapter describes work in this direction.

Chapter VIII

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STABILITY OF BEHAVIOR RATINGS[1]

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Summary.—Significant correlations were obtained between teachers' ratings of behavior on Miller's School Behavior Checklist in two consecutive grades for 246 boys. Ratings on the Aggressive subscale were significantly higher than for other subscales.

This report describes the stability of ratings of deviant behavior in primary grade boys as reported by teachers in different grades. Teachers in kindergarten, first, and second grades completed Miller's (1971) School Behavior Checklist between October and January on all boys in their classes for two consecutive years. Thirty-two teachers participated both years, 32 the first year only, and 53 the second year only. The Boehm Test of Basic Concepts (Boehm, 1971) was also administered.

Of 994 boys rated in the first year, there were 246 who were rated by a different teacher 1 yr. later. All were in either first or second grade at the time of second ratings. This group served as the basis for the present study.

Items on Miller's checklist are divided into seven scales plus one scale which combines results of all scales. The scales which were examined and correlations with Boehm scores across years were: Low Need Achievement .36; Aggression .52; Anxiety .27; Hostile Isolation .13; Extraversion .35; and Total Deviant .45. The Boehm scale assesses the child's ability to recognize pictorial representations of verbal concepts which are embodied in primary curriculum materials. The correlation across years for this test was .36.

All correlations were significant ($p < .001$). However, correlation between the Aggressive Scale ratings was significantly ($p < .05$) higher than those for the other scales (excluding Total Deviant which included Aggressive items) and for the Boehm test. This degree of stability for ratings of Aggressive behavior is consistent with the strong association reported between estimates of early aggressiveness and later delinquency (Conger & Miller, 1957; Glick, 1972) and adult mental and social pathology (Robins, 1966).

It seems that aggressive behavior, even in young children, may reflect trait characteristics rather than predominantly situational reactions. Pro-social behavior (positive side of Low Need Achievement Scale) is less stable and possibly more amenable to therapeutic intervention. This could be advan-

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tageous because previous research indicates that achievement and task-orientedness are more related to pro-social than to deviant behavior in first grade (Camp & Zimet, 1974). Concentrating therapeutic efforts on strengthening positive behavior may not only have a greater chance for success than efforts to decrease aggressive behavior but may also go further toward preventing the academic failure that so often develops as aggressive children become older.

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Chapter IX

Normal and Atypical Reading and Spelling Patterns among Second-Grade Boys

Bonnie W. Camp

Boder's (1971, 1973) technique for identifying normal and atypical patterns of reading and spelling has a number of potential uses, but very little information is available concerning its usefulness in a nonreferral population. In a previous paper, Camp and Dolcourt (in press) described reliability and validity data on a modification of Boder's procedure in fourth to sixth grade children. They confirmed Boder's observation that atypical patterns occurred primarily in children whose reading was at or below grade level. The present study was undertaken to obtain information on reliability and validity of the test procedures in younger children.

Method

Subjects

This study was performed concurrently with another study which utilized second-grade boys in 10 schools in the Denver area. Boys with significant sensory defects and behavior disorders as measured by a teacher checklist were eliminated from the sample. The remaining children were then assigned randomly to participate in the present or in the other project. A total of 63 boys were so assigned to the present project.

Test Description

Boder's procedure involves comparing spelling of well-known phonetic and nonphonetic words with unknown words. From this analysis, she describes the Normal pattern as one in which the child can spell 70 to 80% of his sight vocabulary correctly and can write good phonetic equivalents for unknown words. She describes three atypical patterns. The Dyseidetics can write good phonetic equivalents for unknown words but they cannot spell even those nonphonetic words in their sight vocabulary. Dysphonetics, on the other hand, may be able to spell nonphonetic words in their sight vocabulary but they cannot write phonetic equivalents for unknown words. Alexics are virtual nonreaders who have the problems of both the other groups.

Camp and Dolcourt (in press) developed a modification of Boder's procedure for arriving at these distinctions. The criteria and decision sequence for arriving at Boder's classifications using this modification in older children are presented in Figure 2.

In the present study, the Camp-Dolcourt modification

was used without maintaining distinctions between Dysphonetic and Alexic categories. One change was also made in the test itself. A large percentage of both normal and poor readers in the Camp and Dolcourt study had difficulty spelling nonphonetic words in their sight vocabulary. On the basis that recognition (reading) of words may precede development of recall (spelling), the spelling test was changed so that nonphonetic words on the spelling test were taken from a difficulty level below that of the phonetic words. This was accomplished by designing the spelling test for each grade level so that nonphonetic words from one grade level were combined with phonetic words from the next higher grade level. The difficulty of the spelling test was chosen on the basis of the grade level of the phonetic words. Thus a child reading at Grade Level 3 would receive Grade 2 nonphonetic words combined with Grade 3 phonetic words for his spelling test.

Procedure

To reduce testing time for each child, children were assigned randomly to receive one of the following groups of tests except for three children who received the entire battery:

Group 1 (*n* = 33)	Wide Range Achievement Test (WRAT) Reading Boder Reading A or B WISC-R Vocabulary
Group 2 (*n* = 33)	Boder A Reading Boder B Reading Boder A or B Spelling

Results

Reliability and Validity

Table 13 presents descriptive statistics for the second-grade boys involved in the present study along with similar information from the Camp and Dolcourt study. The correlation between scores on two forms of the Camp-Dolcourt modification was .96. The correlation between grade level estimated from the Boder Reading Test and the WRAT was .93. Both correlations are comparable to the results obtained from older children. They indicate that test-retest reliability is acceptable and that scores are comparable to those obtained from a different test. As in the previous study, differences between means and standard deviations for the two Boder forms were nonsignificant. The standard error of the difference between Boder A and B was .48.

The 33 children who received both the spelling test and the reading test were divided into groups according to reading

level. Those with scores above grade level were categorized as High, those with scores between grade 1.3 and actual grade level as Average[1], and those with scores at or below grade level 1.2 as Poor. Table 14 shows the frequency with which each type of reading-spelling pattern was observed in these three groups of second-grade children. Differences among the three reading groups in occurrence of normal and atypical patterns were statistically significant, Chi-square (2), 10.98, $p < .01$. Nevertheless, 7/19 High readers were classified as having an atypical pattern. Five of these were classified as Dyseidetic because they spelled less than 50% of their sight vocabulary correctly.

Analysis of Errors

Borrowing from the literature on verbal mediation, Camp and Dolcourt suggested that it may be useful to distinguish between "control" errors (letter reversals, confusions and transpositions) and "production" errors in which the content of what the child produces is altered. Bizarre errors would come under the category of production errors. Although Boder described Bizarre errors as primarily characteristic of Dysphonetics, others have tended to group both "control" errors and Bizarre errors together as characteristic of developmental dyslexia (Critchley, 1968). One reason for making a distinction, however, is the common understanding that "control" errors are not significant unless the child is over 8 years of age (Critchley, 1968). Their occurrence at older ages may represent evidence of developmental delay or immaturity.

Bizarre errors on the other hand appear to be qualitatively different from "control" errors. One can, in a sense, understand many "control" errors in the same way one understands typographical errors. Bizarre errors, however, do not make sense. Their presence suggests some twisting of the message at a central or input level. As such they may represent a distortion which should not be particularly age related. Consequently, one would expect to find Bizarre errors occurring in poor readers but not in normal readers even at younger ages.

The percentages of control and Bizarre errors in the different groups conform to these expectations. Table 15 shows the percentage of children at each reading level who showed these two types of errors. As expected, the three reading groups do not differ significantly with respect to the number of children showing control errors; however, the groups do differ, Chi-square (2) 9.69, $p < .01$, with respect to number of children showing Bizarre errors.

It was also of interest to determine how close the current population conformed to Boder's expectations regarding correctness of spelling sight vocabulary and ability to write phonetic equivalents. Boder has reported that normal readers can spell

70 to 80% of the words in their sight vocabulary. Among the present Average and High readers, 67% could spell 50% or more of their sight vocabulary while only 14% could spell 80% or more. Among Low readers 50% were able to spell 50% or more of their sight vocabulary. With the Camp-Dolcourt procedure, therefore, it seems more reasonable to expect readers with a normal pattern to be able to spell 50% of their sight vocabulary rather than 80%.

With respect to phonetic equivalents 7/19 High readers, 3/8 Average readers and none of the Low readers used phonetic equivalents for 50% or more of their misspelled words.

Discussion

In the past, most classifications of reading disorder have either remained descriptive or have relied heavily on nonreading information to distinguish among different types of problems (Blom & Jones, 1970). Often diagnosis has been made by exclusion rather than through positive signs (McCarthy & McCarthy, 1969). Boder's procedure represents a useful method not only for making diagnostic distinctions derived solely from analysis of reading and spelling behavior but also for making a positive diagnosis of a normal reading pattern even in a slow reader. She has also called attention to important differences in the types of spelling and reading errors that children make.

Following Boder's lead, we have found it useful to distinguish first between children who can and those who cannot (do not) write phonetic equivalents. From Boder's writings, one would expect spelling errors which are phonetic equivalents to be common in normal readers, Dyseidetics and those with nonspecific reading retardation. These children have a fundamental understanding that symbols represent sounds. Present results confirm this observation for good readers.

Control errors, on the other hand, which occur in young children and in all three atypical patterns, seem to represent immaturity. Their appearance in all reading levels in the present study confirms this expectation.

Children who make Bizarre errors may or may not also be immature. Consequently, Bizarre errors and Control errors may occur independently of each other. However, because their basic understanding of sound-symbol relationships is distorted, children who make many Bizarre errors would be less likely to achieve competence in reading to the same degree as children who are basically only immature. This would explain why Bizarre errors occur primarily among poor readers even at this early stage.

Of some concern is the fact that 5/19 High readers were classified as Dyseidetic in the present sample. It is, of

course, possible that the essence of the difference between Dyseidetic and Normal has not been captured in the present analysis. Many feel there is a qualitative difference between the normal reader and the abnormal reader who can "hear" phonetic differences but must painfully and laboriously sound out words each time he sees them because of an inability to remember the visual gestalt (e.g. Thompson, 1973).

In personal communication, Dr. Boder notes that she does not mean to imply that Dyseidetics are the only ones who write phonetic equivalents for nonphonetic words. Her point seems to be that Dyseidetics, as opposed to Normals, write phonetic equivalents for well-known nonphonetic words. She suggests that we created artificial Dyseidetics by giving high readers a spelling test at their reading level rather than their actual grade placement because they were not really familiar with the words. However, the known nonphonetic spelling words come from the list 1 year below their reading level and this was consistent with Boder's directions (c.f. Boder, 1973, p. 302). Thus, even though Boder's analysis of these results may be correct, it introduces a new variable, namely the degree of familiarity which may influence reading-spelling patterns independently of its influence on speed of sight reading. This is a tricky point and one which deserves further thought in relation to both High and Low readers.

An additional question may be raised concerning the extent to which differences among reading groups reflect IQ differences rather than reading group differences. Since IQ data were not collected on children who received both reading and spelling tests, this cannot be answered from the present data. In the previous study, path analysis demonstrated that IQ was only indirectly related to Boder classification but no more than expected from the fact that reading level and IQ were directly related. Reading level, on the other hand, was directly related to Boder classification. It seems reasonable to expect a similar pattern of relations among IQ reading level and Boder classification in the younger group studied here. Even if, as seems doubtful, Boder classification should be related to IQ rather than reading level, Boder's distinctions would still be useful since currently there is no distinct reading behavior pattern common to poor readers of low intelligence and distinct from that of poor readers of average or higher intelligence.

Boder suggests that the Dysphonetic and Dyseidetic forms of dyslexia can be detected even after tutorial experience. However, it is not clear whether her atypical reading-spelling patterns can be considered to be diagnostic of developmental dyslexia in a general population. The behaviors described by Boder certainly occur in groups of normal children as witnessed by the data reported here and previously. Further it seems unlikely that educational experience would fail to influence test

results in most children. This does not, however, obviate the utility of Boder's approach.

Our experience to date rather suggests a slightly different view. Developmentally, learning to make associations between graphic forms and meaningful sounds should be easier than attaching nonmeaningful sounds (e.g. phonics) to nonmeaningful visual images (e.g. graphic forms).

In the early stages of learning to read, the "look-say" approach might be expected to produce the quickest gains with least incidental influence on learning to spell. Persistent reliance on this method of processing could soon become inefficient as the total word load increases. A phonics approach to decoding, on the other hand, may be more difficult to learn initially but eventually becomes a more efficient and versatile method for processing written information.

In this context, reliance on developing associations between auditory and visual word forms may represent a more immature approach to the task of reading than attempting to translate the graphic form into a series of sound-symbol relations. Attempts to write phonetically would therefore represent a higher level of development. This is consistent with the finding that none of the Poor readers used a substantial number of phonetic equivalents while the percentage steadily increased as reading competence increased. It is also consistent with the finding that the Dyseidetic pattern was by far the most common among High readers in both the present and previous studies.

Summary

Reliability and validity data are reported for the Camp-Dolcourt modification of Boder's procedure for evaluating atypical reading and spelling patterns. Sixty-three second-grade boys received either two forms of the Camp-Dolcourt reading test and one spelling test or one form of the Camp-Dolcourt test and the Wide Range Achievement Reading Test. Alternate form reliability with the Camp-Dolcourt forms was .96 and the correlation between these and the WRAT was .93. The 33 boys who received both reading and spelling were divided into High, Average and Low reading groups to examine the occurrence of Boder's atypical reading-spelling patterns and different types of errors. The atypical patterns occurred significantly more frequently as reading skill decreased. "Control" errors were common among all reading groups but Bizarre errors occurred primarily among poor readers.

Footnote

[1]This is an extremely lenient definition of "average" reading. The actual grade placement of all children was 2.8

at the time of testing. Four out of seven children would have been considered Poor readers if "average" included only those who were no more than 6 months below grade level in reading (e.g. Jansky and de Hirsch). If children who are truly Poor readers are erroneously classified as "average" by the present criteria this would tend to bias results against hypotheses relating Reading group and Reading pattern. Hence the current classification was allowed to stand.

Chapter X

Verbal Mediation in Young Aggressive Boys*

Bonnie W. Camp

A number of studies indicate that the presence of aggressive behavior problems in the early school years is highly related to later delinquency (Conger & Miller, 1966; Glick, 1972 a, b) and/or psychopathology (Robins, 1966). These problems, especially in boys, also account for the majority of referrals to mental health services in childhood and at older ages are commonly associated with serious learning problems (Miller, Hamp, Barrett & Noble, 1971). Although similarities in behavior and cognitive functioning of young aggressive and older delinquent boys have been reported (Farrington & West, 1971), very little is known about whether and how cognitive and personality development in aggressive children deviates from that of normal children.

In a previous study, Camp, Zimet, van Doorninck and Dahlem (in press) found that young aggressive boys showed generally adequate vocabulary and verbal development but performed more poorly than normal boys on nonverbal tests of intelligence, reading and ITPA Auditory Reception. These findings resembled the pattern described by Jensen (1966) for children who fail to use verbal mediation strategies in problem solving situations despite adequate verbal ability. Camp, et al suggested that the pattern of abilities observed in aggressive boys might therefore reflect a deficiency in development of verbal mediation and an accompanying prolonged reliance on "associative" rather than "cognitive" processing of information (White, 1965). The present paper represents a further exploration of this hypothesis.

Verbal mediation has been defined by Jensen as follows:

> Verbal mediation consists of talking to oneself in relevant ways when confronted with something to be learned, a problem to be solved or a concept to be attained. In adults the process generally becomes quite automatic and implicit; only when a problem is quite difficult do we begin "thinking out loud". Most mediational processes take place subvocally below our level of awareness. (1966, p. 101)

Jensen has also suggested that deficiency in mediational activity may be most evident in dealing with problems which require verbal medation but which are ostensibly "nonverbal". He explains this apparent paradox by suggesting that for some individuals, verbal behavior is not aroused by the task unless the

*Journal of Abnormal Psychology, in press

problem is posed verbally. In such instances, "the subject tries to solve the problem on the perceptual level, and for more difficult problems this approach is totally ineffective" (1966).

The possibility that young aggressive boys may be deficient in use of verbal mediation strategies is particularly interesting for at least two reasons. For one, current theories regarding how children develop self-control place great emphasis on achieving mediational use of language (Meichenbaum, 1975; White, 1965, 1970) and self-control seems to be a major problem for these children. Secondly, these children often display serious learning problems and use of verbal mediation in problem solving has also been described as a main influence on educability and learning (Jensen, 1966). Thus, a better understanding of cognitive functioning in aggressive children, especially as it involves use of mediational strategies in problem solving might be helpful in developing therapeutic approaches to them.

White's (1965, 1970) conceptualization of the process whereby children make the transition from reliance on juvenile logic to the use of adult logic in guiding behavior provides a framework for examining such cognitive activity. White has suggested that when children become able to employ language in a mediational fashion for inhibiting first-available responses to a stimulus, they become capable of utilizing the "cognitive" processing characteristic of adult logic to guide their behavior. Prior to this transition, children rely on associative processing, a rapid response system relatively uninfluenced by verbal control, in which the pattern of learning resembles that of animals in similar situations and follows conventional principles of association between stimulus and response. After the transition, speed of responding, especially in handling difficult problems, is slowed and behavior is increasingly regulated by internalized linguistic controls. However, associative responding does not disappear. Rather, White conceives of the two levels as being temporally stacked with the faster associative mode, unless restrained, having precedence over the cognitive mode. Whether the cognitive or associative mode determines a subject's response will depend upon the conditions which influence his tempo of response and/or his ability to restrain a first-available response (White, 1965).

The two key concepts in White's analysis appear to be speed of responding and ability to inhibit first-available responses through use of verbal mediation strategies. Children who rely on associative processing should show a pattern of cognitive functioning characterized by impulsivity, difficulty inhibiting responses and failure to use verbal mediation in problem solving. If Jensen (1966) is correct about the importance of verbal mediation to educability, associative processors should also show a greater discrepancy between intelligence and

achievement than children who use cognitive processing more extensively. It is hypothesized that the cognitive behavior of young aggressive boys can be distinguished from that of normal boys by characteristics indicating a reliance on associative processing.

Some elements in this hypothesized set of relations have already been described. Meichenbaum and Goodman (1969), for example, have shown inferior response inhibition among impulsive children in a Luria type task. Meichenbaum (1975) also reports that "reflective preschoolers use their private speech in a more mature, more instrumental self-guiding fashion than impulsive preschoolers". Dickie (1973) has shown a relationship between failure to inhibit responses in the Simon Says game and immaturity of private speech in preschoolers. Poor achievement has been related to impulsivity (Camp, Note 1; Kagan, 1966; Keogh & Donlon, 1972) and, in older children, to associative responding (Achenbach, 1970).

Many of these same elements have been described in aggressive children. Schleifer and Douglas (1973) reported a negative correlation between teachers' ratings of aggression in preschoolers and measures of moral judgment and field independence.[1] Others have reported that aggressive preschoolers show less ability to persist in a monotonous activity and to delay gratification (Block & Martin, 1955; Livson & Mussen, 1957). Older aggressive children also tend to have serious deficiencies in academic achievement (Feldhusen, Thurston & Benning, 1970). It remains to be seen, however, whether various aspects of the associative processing pattern can be demonstrated to characterize the cognitive functioning of young hyperaggressive boys. The present project was designed to explore this question by comparing the performance of high aggressive boys with that of low aggressive boys on several tasks measuring vocabulary, reading, speed of responding, ability to restrain motor responses, use of private speech during nonverbal problem solving and regulation of behavior in response to overt and covert self-verbalizations.

Method

Subjects

Subjects were selected from first- and second-grade boys in 19 Denver Public Schools scattered geographically throughout the city. Teachers completed Miller's (1972) School Behavior Checklist (SBCL) on all boys in their classes between mid-October and January. Parental permission for participation in the study was requested simultaneously.

The SBCL (Miller, 1972) is an inventory of 96 deviant and prosocial behaviors observable in a school setting. It was originally developed by Ross, Lacy and Parton (1965) to identify deviant behavior in 6 to 12 year old boys. Miller

modified and cross-validated the scale on 5373 children. Scores on the SBCL are based on the total number of items checked in each scale. Miller reported that most children have some "deviant" behaviors but very few children have a large number. Miller's norms provided standard *T* scores (mean = 50, *SD* = 10) for subscales of Aggression, Anxiety, Academic Disability (7 to 12 year olds), Cognitive Disability (3 to 6 year olds), Hostile Isolation, Extroversion and Total Deviant behavior. Factor analysis of raw data on 994 Denver boys in kindergarten through second grade yielded similar subscales (see van Doorninck & Camp, 1977).

Miller, Hampe, Barrett and Noble (1971) reported that a score 1 *SD* above the mean on the total scale produced maximum separation of males referred to a child guidance clinic and males in the general population. This cutoff classified 84% of the general population of boys as nondisturbed compared to 23% of the boys in the clinic population. To increase confidence that the boys included in the Aggressive group were significantly deviant, however, we selected a score of 2 *SD* above mean on Miller's male norms for the Aggressive scale alone ($T \geq 70$) as the minimum level for inclusion in the Aggressive group. Because only a small percentage of the population could be expected to be this deviant, a large number of children would have to be screened to locate a sizeable sample for study. Asking each teacher to complete the SBCL on all children in a class was more than we could reasonably ask. To reduce the demand on teacher time and avoid bias in selection of which children to rate, we decided to limit ratings to one sex. Males were selected for study because most of the previous work had been done with boys, and because aggressive behavior problems are more common in boys than in girls and are the most frequent cause for seeking mental health services in childhood.

In the total sample of 832 teacher ratings, there were 115 boys with a $T \geq 70$ on the Aggressive scale of the SBCL. Of these, parent permission for testing was obtained on 52, of whom 49 completed testing. (Families of three children moved before testing could be completed.) Miller (1972) noted that all types of deviant behavior increased sharply as the IQ dropped below 90. As a result we considered the possibility that the overall IQ in aggressive boys might be lower than in controls. To evaluate differences in aggressive and normal boys with average intelligence, a subsample was created of children with Performance IQ's 90 and above. There were 35 Aggressive boys who had nonverbal IQ's (PIQ) of 90 or above.

Permission for testing was received for 193 of the 375 boys who were identified as Normal on the SBCL (no scale with a *T* score more than 1 *SD* above the mean). As each Aggressive boy was selected a Normal boy was selected at random from those in the same age range, school and census tract of residence. When a boy in the Normal group was found to have a nonverbal IQ

below 90 (PIQ), an additional control subject was selected at random from his age and residence group. A total of 46 Normal boys were tested: 38 had PIQ's $\geq$ 90.

Table 16 presents descriptive information, including socioeconomic status scores (SES)[2], concerning composition of the Aggressive and Normal groups with and without inclusion of children with nonverbal IQ < 90. This table also presents mean scores on three additional scales from the SBCL, Low Need Achievement (LNA), Anxiety (Anx), and Extroversion (Ext). Aggressives and Normals did not differ in SES score nor ethnic status. The aggressive group had significantly higher scores on LNA, Anxiety and Extroversion than the Normal group; however, the group scores were all less than 1 SD above the mean. Consequently the statistically significant differences were thought to reflect differences in criteria for selecting the groups.

Tests Administered

Boehm Test of Basic Concepts (BTBC) (Boehm, 1967). Based on an analysis of primary curriculum materials, this test assesses the child's ability to recognize pictorial representation of concepts needed by the child in following directions at this level. This was selected for its content validity and because it had contributed significantly to the previous discriminant analysis. Scores represented the total number correct out of a possible 50.

Wechsler Intelligence Scale for Children (WISC-R) (Wechsler, 1974). Seven subtests from the WISC-R were administered as described below. These seven were used to derive a Full Scale IQ (FIQ).

Verbal Scale Subtests. Information, Similarities, Vocabulary and Digit Span were selected. The first three included three fourths of the tests identified by Cohen (1959) as representing a verbal comprehension factor at age 7½ and have been reported to be factorially similar to a number of ITPA subtests. In addition, these tests had contributed significantly to discriminating between High Aggressive and Low Aggressive boys in the previous study. Digit Span was added to include an auditory memory test since differences in visual memory had also been identified previously. Scores derived from these tests included scaled scores for each subtest and a prorated Verbal IQ (VIQ).

Performance Scale Subtests. Block Design, Object Assembly and Mazes were selected as measures of nonverbal problem solving. These tests compose Cohen's (1959) perceptual organization factor at age 7½ and have substantial loadings on g at that age. Scaled scores were recorded on these tests along with a prorated Performance IQ (PIQ). The PIQ estimated from these subtests

contributed significantly to discriminating between High Aggressive and Low Aggressive boys in the previous study. This PIQ was used as the criterion of normal intelligence.

Illinois Test of Psycholinguistic Ability (ITPA) (Kirk, Kirk, & McCarthy, 1968). Subtests from the ITPA were selected because they contributed to different factors than verbal tests of the WISC-R or, in the case of verbal expression, they tapped a behavior very close to those of primary concern. In addition, tests which did not contribute to a discriminant analysis in the previous study were dropped. The resulting subtests were auditory reception (AUD-RC), visual memory (VIS-MM), and verbal expression (V-EXP), all expressed as standard scores.

Wide Range Achievement Test (Jastak & Jastak, 1965). The Reading portion (WRAT-GE) of this test was utilized for a rapid estimate of achievement in this area and expressed as a grade equivalent.

Wepman Test of Auditory Discrimination (Wepman, 1966). This test was chosen to rule out grossly significant problems in auditory discrimination. To conserve time, only the first half of the test was given.

PMA Spatial Relations (Thurstone, 1962). This was selected specifically for purposes of recording private speech during administration of the procedure and to obtain another measure of nonverbal problem solutions. Scores were expressed as percent correct.

Measures of Impulse Control. "Simon Says" is a popular children's game which has been used by Dickie (1973) and Strommen (1973) to measure response inhibition. Some preliminary work with Strommen's procedure indicated that even at kindergarten level, few children made errors when the command included Simon Says. Hence only errors on inhibitory trials were scored and these included both incipient and fully expressed errors. In addition, it was suggested that even in normal children, the visual as well as auditory stimulus of facing the examiner might lead to more errors than an auditory stimulus alone. Consequently Strommen's procedure was modified to include 10 trials facing the examiner and 10 trials with the child's back to the examiner. Scores were total errors on inhibition trials facing the examiner (SS-FAC) and total nonfacing (SS-NON).

Foot depression. This task was modified from Meichenbaum and Goodman (1969a). The apparatus consisted of a box which flashed a blue or a yellow light in random order. The child was instructed to "Push" a foot pedal when one light appeared and "Don't Push" when the other light appeared. Lights were flashed at the rate of one every 2 seconds. Children were

randomly assigned to receive the blue or yellow light as the "Push" signal. They were seen under two conditions, covert, and overt. Thirty covert trials in which there were no instructions for verbalization were administered first. Then 30 overt trials were given during which the child was instructed to verbalize "Push" and "Don't Push" to the appropriate light before responding.

Preliminary review of the foot depression data suggested that only errors on inhibition trials occurred with enough frequency to warrant inclusion in the data analysis. Inhibition errors under overt self-instruction (FOOT-OV) and under covert self-instruction (FOOT-COV) were the two scores derived from this task.

Finger Tapping. Also modified from Meichenbaum and Goodman (1969b) this procedure used an apparatus with a telegraph key on which the child rested two fingers of his preferred hand. He was first asked to try out tapping the key and this was recorded as a baseline measure. Then he was asked to say the word "Batter" to determine the effect of a neutral word on tapping speed. This was followed by instructions to say "Faster" while tapping faster and finally by instructions to say "Slower" while tapping slower. Two, 1-minute trials were given under each condition and each condition was given under two verbalizations sets. Under covert verbalization, the child was instructed to whisper the word. Under overt verbalization he was instructed to say the word aloud.

On theoretical grounds, ability to tap slowly under overt and covert conditions was thought to be the most likely way in which capacity for inhibitions to verbal commands might be evidenced in the finger tapping task. Preliminary group comparisons on all finger tapping variables also suggested that group differences in Baseline tapping speed might be discriminating. Consequently, finger tapping variables chosen for examination in the present study included Baseline tapping speed (FT-Base), speed of tapping under overt "slower" command condition (FT-OV) and speed of tapping under the covert "slower" command condition (FT-COV).

Matching Familiar Figures (MFF) (Kagan, Rosman, Day & Albert, 1964). Kagan's MFF for elementary school-aged children was administered according to the procedure accompanying the test. Scores included average time to first response on each card (MF-RT) and total errors over 12 cards (MF-ERR).

Verbal Mediation and private speech. Previous work with Kendler, Kendler and Learnard (1962) optional shift task as a measure of mediational activity was disappointing and led us to consider alternatives. An obvious possibility was to follow Jensen's definition and assess verbal mediation directly in problem solving tasks. Previous work by Kohlberg, Yaeger

and Hjertholm (1968), Dickie (1973) and Meichenbaum (1975) suggested that such direct assessment might be feasible during performance on nonverbal tests. An obvious drawback of such observations is the possibility that the group of children who fail to vocalize during testing could include some whose mediational activity was already internalized as well as some who were not aroused to mediational activity. However, Meichenbaum reported that the majority of private speech in impulsive preschoolers was immature and Dickie showed that this percentage was related to age in normal children. Distinctions between aggressive and nonaggressive boys might therefore be observed in amounts of immature speech even if distinctions could not be drawn between different types of silence.

It seemed that the best chance of eliciting private speech was to use a variety of nonverbal tasks of increasing difficulty. Rather than add several additional procedures to an already lengthy battery, it was decided to record private speech in the nonverbal tests already selected for inclusion in the battery plus the spatial relations portion of the PMA. (See Appendix A.)

Based on Dickie's (1973) work, a scoring system for vocalizations was developed for use during performance on Block Designs, Object Assembly, Mazes, Visual Sequential Memory and PMA Spatial abilities. The following types of vocalization were scored.

- Word Play - singing, whistling, mouth noises, nonsense words.
- Outer - remarks addressed to nonhuman objects or others not present; comments about the task that are not self-guiding, including those which would be self-guiding if they occurred before performance.
- Inner - self-guiding remarks, preparatory statements and self-encouraging comments.
- Muttering - inaudible words or statements.
- Tension release - emotional expressions related to success, failure or frustration.
- Social - remarks clearly directed toward the examiner, usually with eye contact and/or obvious pause for response.

A tape recording as well as the examiner's written record were made of these sessions. Examiners were trained to reach 90% agreement in scoring and each child's record was scored independently by two examiners. Disagreements were resolved by consensus.

The number of each type of utterance was summed across all tasks. On theoretical grounds, private speech was then grouped into two levels of maturity as suggested by Dickie (1973) and various forms of social speech were grouped together. This yielded the following three summary scores: (a) Immature (IMM)--Word play and outer directed, (b) Mature

(MAT)--self-guiding and muttering, and (c) Social (SOC)--tension release and social.

Private speech was also recorded during the Matching Familiar Figures Test. With this test, however, the examiner recorded all instances of private speech in writing. The resulting record was then scored in two ways. In one, utterances were scored according to whether they were clearly inner directed (MF-INN) or as some other type of speech (MF-OTH) and the total number of each type was counted. (The common utterance "This one" was by convention included in the "Other" category.)

Because a correction procedure is used on the MFF, a child who makes a lot of errors might achieve a higher score on either Inner or Other types of utterances simply because he had to continue selecting an answer until he was correct. Therefore a second procedure for scoring MFF vocalizations was also devised. This consisted of counting the number of cards on which a vocalization irrelevant to the task occurred (MF-IRR) and also the number of cards on which a relevant remark occurred (MF-REL). Since both types could occur on all cards, these two scores were independent and ranged from 0 to a maximum of 12.

Procedure

SBCL's were obtained from teachers between October 1974 and January 1975. The BTBC was given to the entire class within two weeks of the time SBCL's were completed on the boys. Individual tests were performed between December and March in three sessions of approximately 1 hour each. All children received all sessions and examiners were uninformed regarding group membership of the children. Each session was administered by a different examiner with order of the sessions depending upon scheduling examiner, space, and child.

Results

Scores on all 37 variables were available on 49 Aggressive and 46 Normal boys. (Data were incomplete on 2 Aggressive boys because of equipment failure and in one case because the family left town before the testing could be completed.) In the Aggressive group, complete data were available on 32 boys with PIQ $\geq$ 90 and in the Normal group on 38.

Because Miller (1972) found a sharp increase in all types of problems as the IQ dropped below 90, initial analysis was confined to the data on boys with PIQ's $\geq$ 90. Both a stepwise and a direct discriminant function analysis were performed on the data for these two groups. Since differences between results with the two methods were minor, only results of the stepwise analysis will be presented.

In the stepwise analysis, 36/38 variables combined to

yield a discriminant function with an associated Wilks Lambda of .344 (Approximate $F(33, 36) = 1.746$, $p < .055$). Using this discriminant function, 89% of known cases (31/35 Aggressive and 34/38 Normal) were correctly classified (Chi-square = 51.43, $p < .001$). However, between step 14 and step 38 only one additional case was correctly classified. At the same time, values for the standardized discriminant coefficients changed so that IQ variables were given larger weights than in earlier steps. Consequently, only the results from the first 14 steps are presented in detail.[3] Table 17 presents the group means and standard deviations, F values for univariate group comparisons and the standardized discriminant function coefficient for each variable at the end of 14 steps.

The discriminant function derived from 14 steps classified 88% of known cases correctly (31/35 Aggressive, 33/38 Normal; Chi-square = 48.06, $p < .001$). The Wilks Lambda of .477 has an approximate $F(14, 55)$ of 4.307 ($p < .001$).

Variables contributing in the direction of classification as Aggressive include vocabulary (VOCAB), immature (IMM) and irrelevant (MF-IRR) private speech, speed of baseline finger tapping (FT-BAS), speed of tapping under covert commands (FT-COV), faster reaction time on the MFF (MF-RT) and inhibition errors on Simon Says in the nonfacing condition (SS-NON). Variables contributing to classification in the direction of Normal are speed of tapping under overt commands (FT-OV), longer reaction time (MF-RT) on the MFF, reading achievement (WRAT-GE), PIQ, Digit span (DIGIT), Information (INFO), Mature (MAT) and Inner directed (MF-INN) private speech and Social speech (SOC).

Of the variables retained from the previous study by Camp, Zimet, van Doorninck and Dahlem (in press), only the WRAT, PIQ and Information contribute in these first 14 steps. Other variables did contribute in later steps and all contributed in the direction noted previously. Furthermore, when most of the new variables were eliminated from the discriminant analysis on the present data, results were very similar to those reported previously. The new variables dealing with speed of response, type and use of private speech and response inhibition appear to be more powerful in separating the two aggressive groups.

Intraclass correlations were also examined to determine whether significant correlations existed between variables which contributed to the discriminant function in different directions. Table 18 presents these correlations for the variables in the 14-step analysis.

Variables with positive intraclass correlation coefficients above .30 ($p < .01$) but which contribute in different directions to the discriminant function fall into three groups: WISC variables, private speech variables and finger tapping

variables. The positive correlations between WISC-R Vocabulary and the three variables Information, Digit Span and PIQ are understandable as evidence that all four tests share some measurement of intelligence which does not contribute to the distinction between Aggressive and Normal boys. Similarly, the private speech variables probably share some element of speech production or total volume of speech which does not distinguish as well between the groups as the quality of the speech produced. These findings are consistent with Jensen's (1966) position that language is required for verbal mediational activity but other factors determine whether it will be used in that fashion.

The commonality between the finger tapping variables can be seen to reflect the fact that individuals differ in the general level to which they slow down under both overt and covert commands. This does not contribute to the distinction between Aggressive and Normal group membership; however the relative difference in slowing under the two types of self commands apparently does contribute to the distinction.

To evaluate the effect of including children at all IQ levels in the analysis, a stepwise discriminant function analysis was also performed including all cases. Results were essentially similar to those reported for the PIQ $\geq$ 90 group; however the accuracy of classification was decreased to 82% for the complete set of variables and to 79% for the first 14 steps, with associate Chi-squares of 50.44 (df = 1, $p < .001$) and 36.6 (df = 1, $p < .001$) respectively.

Discussion

The findings in general confirm the prediction that High Aggressive young boys would show a pattern of cognitive functioning consistent with reliance on "associative processing" as described by White (1965). Differences between Aggressive and Normal boys may be interpreted as reflecting a rapid response style and failure to employ mediational activity unless it is specifically requested. Such failure to use mediational activity does not result from lack of ability, i.e. from a "mediational deficiency" (Reese, 1962), since they had good vocabularies, used self-guiding speech in some circumstances and showed ability to inhibit responding by overt self-verbalization of instructions. Rather, the failure in High Aggressive boys appears to represent a "production deficiency", a term introduced by Flavell, Beech, and Chinsky (1966) to describe the situation in which children fail to use a skill which is in their possession.

In addition to a "production deficiency", however, elements of a "control deficiency" also appear to be present. Kendler (1972) has used this term to describe the situation in which a child produces verbal mediating responses but these

do not achieve or maintain functional control over behavior. This appeared to be the case in High Aggressive boys who were superior to Normals in slowing finger tapping speed under overt self-verbalization but showed decreased ability to slow down under the covert verbalization condition. Meichenbaum and Goodman (1969) reported a similar difference in response of impulsive preschool boys to overt and covert self-instructions.

Luria and Vygotsky (cited in Meichenbaum, 1975) include this type of discrepancy in response to overt and covert commands as a stage in development of verbal control over behavior. They suggest that children first develop the ability to inhibit responding in response to commands from others, then to overt self-commands and finally to internalized controls. All stages prior to the final one would appear to involve some "control deficiency", i.e. limitation on the ability of verbal commands to control behavior. In their scheme, the "control deficiency" of Aggressive boys would indicate functioning at the level of the next to final stage in development of linguistic controls, i.e. the stage where overt self-commands are effective but effectiveness of covert commands is not well established.

Both Aggressive and Normal boys produce inner-directed, self-guiding speech but Aggressive boys talk a great deal more and show a larger proportion of immature, nonfunctional private speech. Their verbalizing does not appear to slow them down as overt rehearsal usually does. Indeed much of their verbalizing may actually have the same lack of functional significance that passive, mechanical, automatic repetition of self-commands have (Meichenbaum, 1974a,b). Such meaningless chatter could even interfere with production of meaningful verbalizations thereby increasing the threshold for arousal of mediational activity Jensen has posited.

The effect of limitations on production of functional mediational activity is to limit the child's ability to inhibit first responses to stimuli and consequently, his ability to control "associative processing". A general lack of such inhibition may account for the inclusion of sequential memory and reading achievement in the variables distinguishing between Aggressive and Normal boys. White (1970) and others (Keogh, 1971; Maccoby, Dowley, Hagen & Degerman, 1965) have concluded that ability to engage in sustained intellectual activity and problem solving may be dependent upon ability to inhibit motor activity. The concentration involved in remembering sequential order and in learning rapid transposition of visual symbols into language melodies may require such inhibition. Thus, poorer performance of Aggressive boys on Digit Span and Reading Achievement could also be a reflection of their deficiencies in maintaining sustained response inhibition.

It is generally agreed that aggressive children lack internal controls (Staub & Conn, 1973) and that this is one determinant of whether aggressive behavior will occur (Megargee, 1971). Traditionally, guilt and anxiety over aggressive behavior, and more recently empathy, have been considered the principal internal inhibitors of aggression (Staub, 1971). The role of cognitive controls in achieving these inhibitions has been increasingly recognized as a potentially important factor in determining whether they will be effective (Bandura, 1973; Singer, 1971; Singer & Singer, 1972). Staub (1971), for example, has suggested that insufficient ego development may help to account for the impulsivity, inability to delay gratification and poor behavioral control often observed in aggressive and antisocial individuals.

The possibility that verbal development may be critical in achieving such control has often been more implicit than explicit. However, Razran (1961) has suggested that linguistic tools may be necessary for cognitive controls to be effective. And White (1965), noting the parallel between Vygotsky's concept regarding the internalization of speech and Freud's concept regarding internalization of parental sanctions, suggests that both may involve the same mechanism. Perhaps this mechanism hinges on the use of internalized verbal commands to decrease arousal. If so, it could be incidental whether the content of the internalized verbal activity involves parental values in regard to aggressive behavior or the type of verbal sequential processing of information involved in silent reading. Difficulty in maintaining response inhibition in dealing with impersonal cognitive tasks such as observed in the present study and difficulty inhibiting aggressive behavior in interpersonal situations could both be symptomatic of an ineffective linguistic control system. Judging by present results, this could involve a weak or inconsistent response to covert commands as well as a high threshold for activating self-regulating verbalizations.

Results of studies on effectiveness of models in promoting inhibition and disinhibition of aggression could pose some difficulty for any theory which emphasizes a central role for verbalization in achieving internal inhibitions. A wide variety of laboratory research supports the conclusion that the process of modeling may be necessary for establishing internal controls (Bandura, 1973; Hartrup & Yonas, 1971). It also seems that actions of models tend to have more powerful effects on behavior than their verbalizations and that disinhibition is more readily achieved than inhibition (Bandura, 1973; Hetherington & McIntyre, 1975).

However, most of these studies have concentrated on describing effects of being an observer and have not explored the issue of whether and what kind of self-verbalization

occurred. According to the hypotheses advanced here, activation and effectiveness of internal linguistic controls may be critically important in determining susceptibility to the effects of models. Moreover, training in use of self-guiding verbalizations appears to be effective in improving the cognitive performance of impulsive and/or hyperactive children (Bem, 1967; Meichenbaum & Goodman, 1971; Palkes, Stewart & Kahana, 1968) and in achieving control over phobic and test-anxious behavior (Meichenbaum, 1975). It remains to be seen whether a similar relationship between self-verbalizations and control of aggressive behavior can be demonstrated.

Summary

Aggressive and Normal boys, 77-97 months of age were compared on measures of verbal ability, types of self-guiding speech, nonverbal intelligence, reading achievement, impulsivity, ability to inhibit responses, and response modulation following overt and covert commands. Discriminant function analysis resulted in correct classification of 92% of the cases. Variables contributing in the direction of classification as Aggressive included vocabulary, immature and irrelevant private speech, fast reaction times, baseline speed of finger tapping, inhibition errors and speed of responding during covert commands for slowing. Results were interpreted as consistent with the formulation that young Aggressive boys both fail to employ verbal mediational activity in many situations where it would be appropriate and when it does occur, covert mediational activity may fail to achieve functional control over behavior.

Footnotes

[1] Interestingly, their test of moral judgments was constructed in such a way that one could make a case for the interpretation that low scores resulted from responding to the most salient perceptual elements rather than necessarily lack of moral judgment.

[2] Each child was assigned an SES score based on his census tract of residence. This score was derived by applying the method described by the U.S. Census Bureau (1963) to the 1970 Census data on education, income and occupation for each census tract in Denver.

[3] Details regarding the complete stepwise discriminant analysis or the univariate analysis may be obtained by writing the author.

Chapter XI

"Think Aloud": A Program for Developing Self-Control in Young Aggressive Boys *

Bonnie W. Camp, Gaston E. Blom, Frederick Hebert and William J. van Doorninck

Impulsivity and difficulty maintaining sustained response inhibition are characteristics which may contribute both to poor achievement and behavior problems in children (Achenbach, 1970; Kagan, 1966; Keogh & Donlon, 1972). Previous studies have also shown that these are distinguishing features of test performance in young, aggressive boys (Camp, in press) whose progressive decline in achievement with increasing age is also well documented (Feldhusen, Thurston & Benning, 1970). A program which could decrease impulsivity and increase capacity for sustained attention in this group could be potentially useful in counteracting both achievement and behavior problems. This would be particularly true if the program were designed for use by educational personnel to assist children in developing control of their own behavior.

Several previous programs have demonstrated that impulsivity during test performance can be decreased with training in verbalization of problem solving strategies (Bem, 1967; Meichenbaum & Goodman, 1971; Palkes, Steward & Kahana, 1968). With the exception of Meichenbaum and Goodman, who selected children from an "opportunity remedial class", children in these previous studies have been selected on the basis of test performance only and not on the basis of deviant behavior. Although impulsivity in hyperaggressive boys would be expected to yield similar results to those obtained in previous studies, this needs to be verified empirically.

Not only are there questions concerning whether similar results can be obtained in deviant children but there are questions regarding whether training may be expected to affect behavior outside the training or testing situation. Of the three studies mentioned, only Meichenbaum and Goodman attempted to measure effects of the program on classroom behavior. They found no significant differences between children in their training and an attention-control group. Though disappointing, their results were readily understandable. Their program was brief, consisting of four sessions over 2 weeks; they selected children on the basis of assignment to the remedial class rather than on behavioral criteria; and their training program consisted entirely of visual materials and impersonal tasks. In addition, it was not clear what rationale guided their selection of classroom behavior to be examined.

Thus despite the apparent promise of cognitive behavior modification as a method for improving behavior and test performance in aggressive children, several alterations seem indicated to increase the likelihood of effects with this group. The present study reports on development of such a program along with results of initial trials with hyperaggressive, second-grade boys. The specific purpose was to determine whether test performance in hyperaggressive boys could be altered by cognitive behavior modification training procedures and whether evidence of impact on behavior outside the training sessions could be demonstrated.

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Method

Subjects

As part of a larger study, 85 regular first- and second-grade classroom teachers in the Denver Public Schools rated all boys in their classes on Miller's (1971) School Behavior Check List (SBCL) between October 1974 and January 1975. This scale was selected because of the extensive background information available on it (Miller, 1971; Ross, Lacy & Parton, 1965) which indicated a high degree of stability in ratings performed by one person at different times and comparable findings between parent and teacher ratings. (Miller, Hampe, Barnett & Noble, 1971). Furthermore, our own work (Camp & Zimet, 1974) showed significant correlations between ratings on the prosocial scale (Low Need Achievement Scale) and classroom observations of on-task behavior performed by independent observers. Significant correlations were also obtained on the Aggressive Scale between checklists completed by teachers a year apart (Camp,1976).

The scores on the SBCL are based on the total number of items checked on each scale. Miller reported that most children have some "deviant" behaviors but very few children have a large number and his norms provide standard T scores (mean = 50, SD = 10) based on the number of items checked in each of 7 factorially derived scales. Scales used in the present study consisted of the Aggressive Scale (37 items) and the Low Need Achievement Scale (23 items).

Using Miller's norms, a T score of 70 (+2 SD above the mean) was used as the basis for identifying Aggressive boys. Out of 832 teacher ratings, there were 115 boys with a T ≥ 70 on the Aggressive scale. Parent permission for testing was obtained on 52. All second-grade boys in this group (n = 24) were selected for participation in the present study.

At the beginning of this project, there were 23 Aggressive second-grade boys from 15 schools still living in the project area. They were randomly assigned to an experimental group (Agg-Exp) of 12 and a control group (Agg-Con) of 11. Before group assignment was announced, one child in the Agg-Con group was eliminated from further participation by the school social worker who felt that too much service was being provided. This resulted in an Agg-Con group of 10.

The Normal group consisted of boys who had no SBCL scale with a T score of 60 or higher, i.e. no more than 1 standard deviation above the mean. In the larger study, a total of 375 boys were so identified and parent permission for initial testing was received on 193. As each Aggressive boy was selected for the larger study, a Normal boy was selected randomly from those Normal subjects in the same age group and census tract of residence. This resulted in a total of 24 second-grade boys who received initial testing. Twelve of these were selected at random from schools where Agg-Exp boys were located to participate as Normal controls (Norm-Con) for follow-up with no treatment other than regular classroom instruction.

Tests Administered

The complete battery of tests administered within 2 months prior to initiating the program is described in a previous paper (Camp, in press). For purposes of pretest - posttest comparisons in the present study, the following tests were repeated within 3 weeks after the program ended: Block Designs, Object Assembly and Maze subtest from the Weschler Intelligence Scale for Children - Revised (WISC-R) along with recording of private speech[1]; the reading test from the Wide Range Achievement Test (WRAT); Auditory Reception from the Illinois Test of Psycholinguistic Abilities; Kagan's Matching Familiar Figures Test (MFF). These tests were selected because previous studies had shown that they contributed to a pattern of differences between aggressive and normal boys (Camp, in press) or because they had been used by Meichenbaum and Goodman (1971).

In addition to the above tests on which both pre- and post-test scores were available, an abbreviated version of the Preschool Interpersonal Problem-Solving Test (PIPS) (Shure and Spivack, Note 1) was administered as a posttest only. This was selected because it was expected to be influenced by the social training dialogues included in the treatment program.

Teacher Ratings

As described previously, only the Aggressive scale of the SBCL (Miller, 1971) was used in identifying boys as Aggressive while scores on all scales were used to identify Normal boys. If social behavior in Aggressive boys was altered by the training program, it was expected that these effects would be demonstrated in a reduction in teachers' reports of aggressive behavior.

Several considerations also led us to anticipate that the Low Need Achievement Scale (LNA) might be equally or more sensitive to effects of the program. The LNA scale consists of 23 items dealing primarily with prosocial behavior such as "Is helpful", "Volunteers to recite", and "Completes assignments". High scores on LNA result from large numbers of negative answers to such questions. Only one item ("seems unconcerned when misbehaves") overlaps with the Aggressive scale and items on these two scales represent the two most important factors identified from the total pool of 96 items which comprise the SBCL (van Doorninck & Camp, Note 2).

The LNA scale has also been described as less stable over a year's time period (Camp, 1976) and more related to achievement (Camp & Zimet, 1974) than the Aggressive scale. In addition, scores on LNA have also been related in first-graders to classroom observations of on-task behavior which in turn was related to achievement (Camp & Zimet, 1975). These considerations suggested that LNA might be more sensitive to any program that would affect

behavior through altering cognitive strategies and that this could be independent of changes in aggressive behavior.

Improvement on LNA behaviors could also be viewed as the positive effects expected from increased self-control. Thus, improvement on the Aggressive scale could be expected as a result of a decrease in undesirable behavior while improvement on LNA would represent an increase in desirable behavior. Since the behaviors tapped by these two scales were not necessarily mutually exclusive or incompatible, changes could be observed on either alone or both. Consequently, both the Aggressive scale items and the LNA scale items were selected for inclusion in the post-ratings to be performed by teachers.

The complete SBCL was originally obtained, as noted previously, in the Fall of 1974. This complete checklist was obtained again on children in the present study just prior to Spring vacation in 1975. Correlations between T scores on these two checklists were .84 for the Aggressive scale and .82 for the LNA scale.

At the end of the training program, teacher checklists were obtained again using only the items for the LNA and Aggressive scales. In addition to completing the checklist in the usual fashion, teachers were also asked to indicate for each item whether the child was "worse", "no change" or "improved" since Spring vacation. Items on the two scales were presented in the order in which they were included on the original SBCL. Teachers were unaware that two scales were involved and no mention was made of how or whether the items were to be separated.

Program

For this study, a training program entitled "Think Aloud"[2] was designed for use with children in daily, 30-minute, individual sessions extending over 6 weeks. This particular schedule was adopted for the following reasons. The most obvious shortcoming of the Meichenbaum and Goodman program was its brevity. Although Bornstein and Quevillon (1976) have subsequently reported significant effects on classroom behavior of even briefer treatment of three preschool children, few would expect significant, sustained improvement in less than a month or two. The Shure and Spivack (1974) kindergarten program, from which the social training lessons were adapted, involves approximately 30 lessons. Experience with the tutorial program for children with severe reading problems (Camp, 1971; Camp & van Doorninck, 1971) has suggested that significant gains may not be expected with fewer than 40 lessons and the impact seems to be improved if these are daily.

The procedures used in training were very similar to those described by Meichenbaum and Goodman (1971) in placing heavy emphasis on modeling of cognitive strategies and concentration on developing answers to the following four basic questions: What is my problem, What is my plan, Am I using my plan and How did I do? (see Meichenbaum & Goodman, 1971 for a rationale regarding

the choice of this group of questions). To engage the child in reacting to all features of modeling (speech and action), the program begins by using the "copy cat" game. During "copy cat", the teacher used cognitive modeling while performing a simple task, e.g. coloring a circle, to introduce the child to the above four basic steps in dealing with the problem. As the child and teacher worked through additional problems (copying designs, puzzles), "copy cat" was gradually faded and the child encouraged to verbalize his strategy.

With increasingly difficult cognitive tasks (Raven Progressive Matrices, PMA perceptual speed materials), the child was encouraged to verbalize to himself while working independently and eventually to fade the problem analysis and strategy planning to a covert level.

Problem solving content included both cognitive, impersonal problems such as used by Meichenbaum and Goodman (1971) and interpersonal problem-solving games as described by Shure and Spivack (1974). Meichenbaum and Goodman used primarily visual materials such as the perceptual speed tasks from the Primary Mental Abilities Test, the Raven Progressive Matrices and Porteus Mazes. We also considered the possibility that results of the Meichenbaum and Goodman program might have been limited by this restriction of tasks to visual material. Some problems in sequential processing and reasoning about auditory information tended to characterize the high aggressive boys in our studies (Camp, in press; Camp, Zimet, van Doorninck & Dahlem, in press). "Doesn't follow directions" and "doesn't listen" are common complaints from teachers in describing impulsive children. It is also evident that children may respond impulsively to verbal questions rather than reason through to an answer. Achenbach (1970), for example, demonstrated the tendencies to give associations to verbal analogies rather than reasoning to a solution relates to impulsivity. The fact that impulsive children have difficulty with inductive reasoning (Kagan, Pearsen & Welch, 1966) may be another manifestation of the same problem. These considerations led us to concentrate on adding auditory-verbal tasks to the visual tasks used by Meichenbaum and Goodman, particularly ones which would require blocking the first impulsive association and reasoning to a solution. This was accomplished in part by devising complex forms of the Simon Says game, use of riddles, verbal justification of answers and following complex instructions in a semantic conditioning task.

Concern for generalization to the classroom also influenced selection of the content and procedures. Meichenbaum and Goodman relied entirely on impersonal tasks for self-instructional training. To increase the likelihood that techniques developed in the training sessions would generalize to interpersonal situations, it seemed important to introduce techniques for dealing with interpersonal problems.

The training program designed by Shure and Spivack (1974)

for kindergarten children seemed ideally suitable for this purpose, if adapted for a slightly older child. Their program was designed to assist kindergarten teachers in helping young children increase their interpersonal problem-solving abilities, and, as a result, their subsequent behavioral adjustment. The program itself consists of a carefully sequenced series of games in which small groups of children can participate. Forty-two preliminary games deal with developing specific language and attentive skills, identifying emotions, thinking about how people have different likes and dislikes and learning to gather information about people. These preliminary games were collapsed into a series of seven preparatory games dealing with exercises in identifying emotions, determining antecedents to an emotion, considering what might happen next in various situations and evaluating fairness of outcomes.

Following these preliminary games, the final games from the Shure and Spivack program were used as described by them with modifications to include content more appropriate for older children. These games pose the problem of finding several alternative solutions to interpersonal situations, anticipating consequences and evaluating outcomes. In addition to formal games and dialogues, Shure and Spivack presented a general problem-solving approach which could be incorporated into conversations in problem situations as they arose naturally. This approach, especially as it dealt with encouraging development of several alternative plans, solutions and possible outcomes, was incorporated into the cognitive portion of the program as well.

The program introduced easy cognitive problems first then preliminary social games beginning with the fifth day. Thereafter, cognitive and social problems were intermixed.

Procedure

A manual and script[2] were prepared which incorporated the previously described material and procedures into a 6-week curriculum. The procedures were rehearsed by the two teachers who were assigned to work with the children. Preliminary role-playing, observation and coaching during trial runs with nonproject children also served to standardize program delivery. In addition, tape recordings were made of each session with each child in the project. These were reviewed regularly by the senior author and served as a basis for monitoring and supervising conduct of the program. Although no formal ratings of fidelity to the program were made, these procedures produced as much homogeneity in program delivery as seemed feasible.

The 12 boys in the Agg-Exp group were divided into two groups based on geographical location in the city. Two teachers were randomly assigned to work with children in each group beginning the week after Spring vacation. Children were introduced to the program by being asked to figure out what game the teacher was

playing as they walked down the hall. The teacher began copying the child's words and actions until he recognized what she was doing. After switching roles and further play, she explained that they were going to use the "copy cat" game to learn how to "Think Aloud" so it could help them solve problems. At the end of the first session she explained to the child that they would be getting together every day at the same time to learn more about how to use "Think Aloud".

At various opportune times during the 6 weeks, the teacher suggested that thinking out loud could help in the classroom and asked the child to think of ways he could use thinking out loud in doing his schoolwork or in getting along with others.

At the end of the 6-week training period, posttesting was completed by graduate students otherwise uninvolved in the project and teacher checklists were obtained again with the modifications described previously.

Results

Test Data

One objective of the present study was to determine whether participation in the Think Aloud program would alter test performance in treated, aggressive (Agg-Exp) boys so that their pattern of scores would resemble normal boys (Norm-Con) rather than untreated, aggressive boys (Agg-Con). Information pertinent to this question was obtained in two ways. One was through analysis of data collected in a pretest-posttest design and one through data collected in a posttest only design. In addition, analysis of pretest-posttest data was performed in two ways, one through univariate analysis of covariance on individual test scores and one through analysis of discriminant scores derived from a discriminant function analysis on normal and aggressive boys.

In the univariate analyses of covariance, two *a priori*, planned comparisons were performed as recommended by Winer (1971). One comparison involved examining the differences between the Agg-Exp group and the Agg-Con group. The second comparison examined differences between the Agg-Exp and the Norm-Con group. Table 19 presents unadjusted means of each group for pre- and post-test scores on each variable. In addition, this table contains *F* values for the previously mentioned comparisons based on adjusted means obtained from the analysis of covariance (Winer, 1971, p. 772).

Tests on which the Agg-Exp group were significantly different from Agg-Con included Maze scores, reaction time on the MFF and Salkind's[3] (Note 3) Impulsivity score from the MFF. Reading achievement, prorated Performance IQ and scores for Immature and Social Speech showed a trend toward the predicted differences.

Tests on which the Agg-Exp group remained similar to the Agg-Con group and different from the Normal-Controls were Object Assembly and Relevant and Other Speech on the MFF. The Agg-Exp group also showed a trend toward significantly greater Inefficiency than Normals.

When several dependent variables are available on different groups of subjects, it is often of interest to determine whether the pattern of test scores in the two groups differs irrespective of differences on individual tests. Discriminant function analysis has been employed in this fashion to derive a variable which is a linearly weighted combination of the several dependent variables. The resulting discriminant score is standardized to a mean of 0 and a standard deviation of 1. Since this score permits assessment of the pattern based on the relationship among dependent variables, it is possible to obtain a significant multivariate discrimination without significant univariate test analyses (McCall, 1970). This technique was employed in the present study to evaluate the overall pattern of similarity between aggressive treated, aggressive untreated and normal boys.

Data from all first- and second-grade subjects who participated in the larger study (n = 93) were utilized to derive a discriminant function score for pretest data. However, the discriminant function analysis used only those test variables on which both pre- and post-test measures were available. Coefficients derived from this analysis of pretest scores were then applied to posttest data available on subjects in the present study. In this fashion, <u>each</u> subject in the present study received both a pretest discriminant score and posttest discriminant score. Table 20 presents the standardized discriminant function coefficients for variables used in the present study in order of importance. In this table, the larger the value the greater the weight placed on this score, irrespective of the sign. The positive and negative signs associated with the centroids indicate whether the sign associated with each discriminant score results in weighting toward the Aggressive or Normal group.

A repeated measures analysis of variance was used to evaluate hypotheses regarding change in the pattern of test scores. The hypothesized treatment effects were expected to result in a significant interaction between time of discriminant score and treatment group with the Agg-Exp and Agg-Con groups differing from Normals on pretest and Agg-Con differing from Agg-Exp and Normals on posttest. The pre- and post-test centroids for subjects in the present study were .60 and -.69 for Agg-Exp, .42 and -.03 for Agg-Con and -.58 and -.73 for Norm-Con. These are presented graphically in Figure 3.

Results of the analysis of variance confirmed all hypotheses. Significant differences were observed for pre versus post discriminant

scores, F (1, 30) = 14.47, $p < .001$, for Treatment Group, F (2, 30) = 3.80, $p < .05$, and the Discriminant Score x Treatment Group interaction, F (2, 30) = 4.29, $p < .05$. Linear contrasts within the interaction showed a significant difference on pretest between Norm-Con and the Aggressive groups combined, F (1, 30) = 21.74, $p < .001$, and nonsignificant differences between the two aggressive groups. On posttest, significant differences were observed between Agg-Con and the combination of Agg-Exp and Norm-Con, F (1, 30) = 7.33, $p < .05$, while differences between Agg-Exp and Norm-Con were nonsignificant.

The PIPS test was given as a posttest only. According to Shure and Spivack, emotionally and behaviorally disturbed children tend to offer fewer different solutions to the problems while engaging in more repetitive talk, irrelevant answers, etc. Group means for these different scores are present along with results of a one-way analysis of variance in Table 21.

Agg-Exp boys gave significantly more solutions than either Agg-Con or Normal-Con boys and they showed a trend toward surpassing Agg-Con in the proportion of solutions to total output. However, whatever advantage they may have had in this regard was probably off-set by the fact that it appears to have been gained through their use of a higher proportion of aggressive solutions than either Agg-Control or Normal Controls. Thus, the training program seems to have loosened their tongues but failed to assist them toward developing enough constructive alternatives.

Teacher Ratings

A second objective in the present study was to determine whether teacher ratings would indicate significant improvement in the Agg-Exp boys. These ratings were analyzed both in terms of T scores on the LNA and Aggressive scales of the SBCL and ratings of change on individual items. Pre- and post- T scores on the LNA and Aggressive scales are included in Table19. Analysis of covariance on the posttest scores showed no significant differences between Agg-Exp and Agg-Con while Agg-Exp and Normals differed only on the Aggressive Scale. This amount of stability is not surprising since these scores are fairly gross measures and the checklist was not prepared as a dependent measure.

Teacher ratings of improvement, on the other hand, should be more sensitive to smaller degrees of change than would be required to alter a T score. Groups were therefore compared on the average number of items improved on the LNA and Aggressive scales. It was predicted that Agg-Exp would improve more than either Agg-Con or Norm-Con on both of these scales. In this instance, however, it was also of interest to determine whether Agg-Con showed more or less improvement than Norm-Con as it was to compare Agg-Exp results with the other two groups. The Tukey test recommended by Winer (1971) was used to evaluate differences between all pairs of means.

On the Aggressive scale, the average number of items improved was 9.7 for Agg-Exp, 10.9 for Agg-Con and .75 for Normal-Control. For the Tukey Test, a difference of 4.87 was necessary to reject the hypothesis of no difference between these means at $p < .05$. By this criterion, the two Agg groups did not differ from each other but did differ significantly from the Normal-Controls.

On the LNA scale, however, the Agg-Exp group showed significantly more improvement than the Agg-Control group which in turn did not differ significantly from the Normal-Control group in number of items improved. Here the mean number of items improved was 10.3, 3.9 and 1.7 for the Agg-Exp, Agg-Control and Normal-Control groups respectively. A difference of 4.57 was required for rejecting the null hypothesis at the .05 level of confidence.

Discussion

The purpose of the present study was to evaluate the impact of 6 weeks with the Think Aloud program on test performance and teacher ratings of behavior in young aggressive boys. Specifically, it was hypothesized that the treated boys would show changes in the direction of becoming more like normal boys and less like untreated aggressive controls. This hypothesis was most clearly supported by results of the teacher ratings of improvement in prosocial behavior and by changes in the pattern of performance on a battery of cognitive tests.

The pre-posttest findings are consistent with the results reported by Meichenbaum and Goodman (1971) following a similar brief program for boys selected only on the basis of test impulsivity. Although some of the tests contributing to the discriminant score involved activities similar to those used in the training program (WISC-R Mazes, Matching Familiar Figures), others did not (WRAT Reading). Furthermore, the private speech measures obtained during testing could be considered measures of spontaneous generalization from the training program to the testing situation.

The demonstration of improved prosocial behavior in the classroom is encouraging, even though the treated group did not differ significantly from the untreated group in reduction of aggressive behavior. However, serious questions could be raised about the validity of teacher ratings both as a measure of change and as a measure of treatment effect in the present study.

Although some have questioned whether teacher ratings accurately reflect the behavior they are purportedly measuring others have found them to be useful in evaluating effects of treatment in disturbed children (Conners, 1972; Werry & Sprague, 1970, 1974). Furthermore, teacher reports are a form of data which is important in its own right. In contrast to the limited time samples often involved in obtaining observational data, teachers have the advantage of prolonged daily contact which provides a large time sample

on which to base their report, particularly in regard to infrequent behaviors. In addition, there are significant correlations between independent behavior observations and teacher report ($r = -.38$) when it involves frequent behaviors readily observed by both teachers and observers as in the case of items of the LNA scale (Camp & Zimet, 1974) versus observations of off-task behavior.

In the present study, a more serious question concerns the validity of the teacher ratings as a measure of change. Since teachers knew whether the child being rated was in the program or not, one could propose that the expectation of behavioral change with the program could result in general ratings of improvement. The fact that there is a difference in results of their ratings on the two scales argues against this explanation.

The possibility that unreliability in the scale influenced results must also be considered. Though reliability has not been established for the rating form in which teachers rated improvement, there is no reason to believe that unreliability would be greater for one group of aggressive boys than another. Unreliability in the measures would have tended to decrease the likelihood of finding significant differences. Yet the magnitude of differences on the Aggressive scale was so small it is difficult to believe that the two groups actually differed on this scale. Differences on the prosocial scale were large enough to be significant despite possible unreliability.

It therefore seems reasonable to conclude that the Think Aloud program was powerful enough to produce significant improvement in both test performance and classroom behavior in aggressive boys. At the same time, the program failed to produce changes in all areas examined and in some instances may have had a negative effect. The points where the program seemed to fail was in channeling the voluminous verbal output of aggressive boys and in improving efficiency. In designing the program we failed to recognize the extent to which chatter, silliness and inappropriate verbal activity might actually interfere with goals of the program. These were handled by ignoring them rather than by trying to attack them directly. Similarly, aggressive solutions to interpersonal problems were considered along with nonaggressive solutions, and no effort was made to consider these categorically "bad". Rather, they were evaluated in light of the consequences along with other kinds of solutions.

Apparently this approach was not enough, given the current program. It is of course possible that more time with the program as it stands could have brought the children to a more appropriate level of functioning with regard to quality of verbal output, efficiency and social appropriateness of their thinking. Another approach, however, would be to structure the program differently so that silliness, for example is attacked directly and the negative consequences of aggressive solutions are emphasized more.

And finally, even if one accepts the teacher ratings as valid, the present design does not allow us to determine whether the observed results, especially the ratings of improved classroom behavior, are attributable to the type of program or to increased individual attention. At this point in our research, however, it was felt that the first priority was to determine whether any alteration in behavior or test performance could be demonstrated in hyperaggressive boys. Further research should help to clarify the specific aspects of the program which are most responsible for the observed changes and to offer less questionable data in support of the "real life" changes. Results of the present study are nevertheless encouraging and suggest that further efforts to develop this approach for use by school personnel may be quite fruitful.

Summary

"Think Aloud" was designed as a training program to improve self-control in 6 to 8 year old boys. It involved modeling and verbalization of cognitive activity to foster use of verbal mediation skills in dealing with both cognitive and interpersonal problems. It was hypothesized that training would lead to improvement in test performance and teacher ratings of classroom behavior in hyperaggressive boys. Twelve Aggressive, second-grade boys participated in daily, 30-minute, individual sessions for 6 weeks. Normal and Aggressive control subjects received no intervention. Teachers rated both trained and untrained Aggressive boys as improving in Aggressive behaviors but they rated the experimental group as showing improvement on a significantly larger number of prosocial behaviors. The pattern of performance on cognitive tests also changed significantly in the experimental group. On pretest, their pattern differed from Normals and resembled the Aggressive control group while on posttest, their pattern resembled Normals and differed from Aggressive controls. Suggestions were made concerning additional refinements needed in the program, but overall results indicated potential value in the present approach for providing assistance to aggressive boys in the early grades.

Footnotes

[1] Recording and scoring of speech during the testing session is described more fully in Camp (in press). Word play and Outer-directed, nonsocial speech were scored as Immature; Inner-directed, self-guiding speech and inaudible muttering were scored as Mature; comments directed toward the examiner and tension releasing verbalizations were scored Social.

[2] For information concerning availability of the manual for the "Think Aloud" Program, contact the senior author.

Footnotes

(continued)

[3]Salkind (Note 3) has described a method for deriving an Impulsivity and an Efficiency score from the MFF. Average reaction time and total errors are first converted to *z* scores. The Impulsivity score (positive values represent more impulsivity) is derived by the formula:

$$\frac{z_{error} - z_{time}}{2}.$$

The Efficiency score (positive values represent inefficiency) is derived by the formula:

$$\frac{z_{error} + z_{time}}{2}.$$

Reference Notes

1. Shure, M. B., & Spivack, G. *The PIPS Test Manual*. Unpublished manuscript, Hahnemann Medical College and Hospital, Philadelphia, Pennsylvania .

2. van Doorninck, W. J., & Camp, B. W. *Factor analysis of the School Behavior Check List*. Unpublished manuscript, 1975.

3. Salkind, N. J. *Errors and latency on the MFFT: A reassessment of classification strategies*. Paper presented at the Society for Research in Child Development, Denver, Colorado, April 1975.

Chapter XII

Self-Control Training Using "Think Aloud" with Dyads

Bonnie W. Camp

As discussed previously, the Think Aloud program was designed along lines described by Meichenbaum and Goodman (1971) for teaching first- and second-grade children how to use self-guiding speech in problem-solving activities. Initial trials with this program were conducted on second-grade boys rated as hyperaggressive by their teachers. Analysis of program results in the preliminary trials showed a significant normalization in the pattern of cognitive test performance among treated boys and improvement in teacher ratings of prosocial classroom behavior (Camp, Blom, Hebert & van Doorninck, in press). Several problems encountered in this program, however, suggested a need for revision and further refinement. The present project was developed to meet this need.

One problem seemed associated with individual sessions. Improvement in aggressive behavior was equivalent in treated and untreated groups. The simplest explanation seemed to be that individual sessions with a teacher provoked little evidence of aggressive behavior to which lessons in the Think Aloud program could be directly applied. Individual sessions were also viewed as impractical in school settings where teachers are seldom able to work with children individually. It therefore seemed desirable to revise the program for use with at least two children at a time. Once problems associated with managing more than one child were resolved, extension for use with larger groups could be considered.

A second problem was failure of the program to channel a number of undesirable behaviors into constructive or incompatible alternatives. For example, silliness and irrelevant chatter and elaboration of aggressive solutions in social situations were dealt with by trying to ignore them. However, these behaviors tended to persist. Furthermore, posttesting with a modification of the PIPS showed that increases in numbers of alternative solutions offered by treated boys resulted primarily from an increase in the number of aggressive solutions. In revising the program, therefore, an attempt was made to meet these problems by 1) promoting use of a signal incompatible with silliness and irrelevance to halt silliness and 2) encouraging and prompting better quality evaluation of solutions and consequences.

The third problem with the original study was reliance on teacher evaluations of improvement when teachers knew group assignment. Since teachers did not know which behaviors contributed to which behavioral factor this should not have produced a difference in scores on the two factors.

Behavioral observations by independent observers are more objective but sample a small time period by comparison to the time sample available to a teacher. However, if teacher ratings and behavioral ratings agree one can feel more confident of the validity of each. If they disagree, the cause of disagreement cannot be determined without further information. Use of behavioral observations was therefore considered to be a useful additional source of information.

A revision of the Think Aloud program was prepared with these considerations in mind. The manual attached as Appendix H is essentially the manual used in this project. The present project evaluated the impact of this revised Think Aloud program with dyads of disturbed boys.

Method

Subjects

Selection of children for this project was carried out early in the 1975-76 school year before classroom teachers ordinarily had had enough time to become well-acquainted with their children. Names of children were assembled for consideration on the basis of information available from the previous school year, intensive classroom observation by a teacher on special assignment and report of the classroom teacher where her daily contact with the child was extensive. Three elementary schools in Denver were selected for participation on the basis of teacher interest and geographical location. Two smaller schools were geographically close while the third, larger school was in a totally different section of town. Each school developed a list of children who were 1½ SD's above the mean on the Walker Checklist (Walker, 1972) scales Acting-out, Distractibility or Poor Peer Relations. A total of 22 first- and second-grade boys were referred for inclusion in the program. Two were excluded because of age. Although no minimum IQ was established for inclusion, one child was excluded because performance on portions of the WISC-R suggested that his mental age was too low to cope with the materials prepared for the program. After the program began, one child from the control group was withdrawn from participation in posttesting and observation at the insistence of the school psychologist. This child was demonstrating a great deal of fearful, bizarre and withdrawn behavior which prompted the school staff to try implementing some special services immediately.

The final Experimental group contained 10 children and the final Control group contained 8 children.

Dependent Measures

Tests Administered. Testing was designed to include

pre- and post-testing with the discriminating battery described previously (Chapter XI) and posttesting only with the Preschool Interpersonal Problem Solving Test (PIPS) (Shure & Spivack, 1975). Both the discriminating battery and the PIPS are described in Chapter XI The only change from the procedure described in Chapter XI was changing the Simon Says game to include 20 trials nonfacing and confining the testing with the Discriminating Battery to the following: WISC-R - Vocabulary, Digit Span, Block Design, Object Assembly and Mazes; ITPA Auditory Reception; WRAT Reading; Simon Says; Finger Tapping and Matching Familiar Figures. In addition, speech was recorded during nonverbal tests on the WISC-R and on the MFF.

Teacher Ratings

Weekly Ratings. On the basis of initial experience with the program, analysis of effects to be expected from the program and analysis of classroom behaviors promoting or hindering learning, we selected eleven behavioral categories to be rated weekly by the classroom teacher and daily by the Think Aloud instructor. These were as follows: Activity level, nature of activity, attention span, verbal communication, cooperation, hostility, frustration tolerance, dependency, attitude toward work, goal persistence and attention seeking. Each behavior was rated on a Likert scale from 1 (positive pole) to 7 (negative pole) with descriptive statements defining ratings of 1, 4 and 7. The guide provided to teachers is presented in Appendix C.

These ratings were performed by regular classroom teachers on both experimental and control children at the end of each week for 8 weeks beginning with the first week in the program. They were completed daily by the Think Aloud instructor. All forms were turned in immediately after completion to obviate comparisons.

Global Ratings. At the end of the 8 weeks' training, regular classroom teachers were asked to complete the 66 items from the Low Need Achievement and Aggressive scales of the School Behavior Check List (SBCL) (Miller, 1972). They answered each item as true or false then estimated whether behavior was "worse", "no change" or "improved". The form presented to the teachers for this purpose is presented in Appendix D. Scores for each child consisted of T scores on the LNA and Aggressive scales along with the number of items "improve", "worse" and "no change" on each scale.

Classroom Behavior Observations

With the assistance of Karl White, graduate student in education at the University of Colorado in Boulder, a

modification was prepared of the classroom behavior observation form used in our previous work (Camp & Zimet, 1974) on the basis of work described by Werry & Quay (1969). The manual and recording form for this are included in Appendix B. This provided for 5-minute observation periods during which behavior was alternately observed for 20 seconds and recorded for 10 seconds. Observers were trained to 90% agreement with each other using films of classroom activity followed by practice sessions in nontarget classrooms. The goal of observations was to obtain a 15-minute sample from each child on four different days during either math or reading instruction. Because of absentees and pressure to complete these observations before Christmas vacation, this was not always possible; however, observations were performed on at least two different days for each child. The total number of behaviors observed in each 5-minute segment were averaged over all observation periods to give an average frequency per 5-minute period.

Program Description

Think Aloud as described in Chapter XI, was adapted for use with two children and modified along lines described below. Appendix H is a copy of the manual used in this project.

In the initial program many children chattered and exhibited self-stimulatory speech amid their self-guiding speech. Also during social problems children frequently offered silly, impractical solutions. To decrease this problem, a game was created to signal silliness when anyone recognized it. First the incompatible silliness gesture--hand over the mouth--was introduced to "trap those silly words before they come out". Teacher and students practiced signalling whenever they heard silly talk. The game consisted of being the first to make the gesture if silliness occurred. To help children curb irrelevant chatter further, the instructor would also ask "Does that talk help you with your problem?" Children were first assisted in identifying when they were being silly and gradually encouraged to accept responsibility for identifying their own silliness.

This remained one of the most difficult problems to handle. Despite the increased attention to channeling irrelevant verbalizations, children continued to have difficulty preventing their own silliness. They could, however, easily recognize others' silliness and could curb their own task-irrelevant chatter when someone else identified it for them.

In the initial program, trained boys offered more aggressive responses than control boys in posttesting. During the initial program all solutions were accepted in an effort to increase the child's repertoire of responses. In this context

aggressive responses were as acceptable as socially appropriate solutions. This was continued in the revised program, since it was felt that developing many alternatives was better than eliminating one kind. However, evaluation of solutions was increased. Immediately following an aggressive solution a sequence of questions was asked which included 1) What might happen next?, 2) How would that make you feel? and 3) What is a different idea of what you could do or say?

It was our expectation that Think Aloud would be most effective in improving task performance if a child spontaneously verbalized about the relevant aspects of the task and achieved internalization of this controling function. In the initial program we failed to emphasize fading of overt verbalizations. In the revised program this was increased. After much overt practice, the child is encouraged to whisper verbalizations so as not to disturb his neighbor. Then he is encouraged to point at what he is thinking about so the teacher can see how he is approaching the task. And finally he is encouraged to reach the stage of internalizing all directions. Each of the three stages reduces the time consumed by verbalizing.

More specific attention was also focused on selecting relevant aspects of a task to consider by noting the time remaining in a session when an independent task is proposed. This time limit consolidated time on task.

Independence was also fostered by systematically presenting tasks so that less and less dependence on the teacher was required. First thinking out loud was introduced with group work. Then children independently repeated one or two of the already completed group tasks. Next the children were given new tasks to complete while thinking out loud with teacher encouragement. Gradually the teacher altered physical proximity to the children. First she introduced Think Aloud while seated between the two children. Then she used thinking out loud on her own problems just back from the work table. Soon she moved across the room while everyone worked independently; occasionally she left the room briefly. In the final stages of Think Aloud training the teacher worked on a task with one child while the other child worked independently.

Procedure

Assignment to experimental and control. As described previously, referrals for this project were solicited from teachers early in the school year using whatever information could be obtained. Since parent permission for participation was obtained prior to referring children to this project, school staff completed and scored the Walker Checklist, and determined whether children fit our criteria before making

parent contacts. Parent permission formes used in this portion of the project are contained in Appendix E. We accepted any child whose Walker Checklist showed T scores above 69 on Acting-out, Distractibility or Poor Peer Relations.

Within each school, children were assigned randomly to participate in initial trials of the program or to wait for the second "wave". All children were eventually offered the program but children in the second "wave" who worked with a member of the project staff were not included in subsequent studies.

As soon as parent permission was obtained, the tests in the Discriminating Battery were administered as described previously.

Implementation. The program was delivered by the project staff (Mary Ann Bash and Margo Simmons) who had assisted in development and implementation of the initial individual program. Children were seen daily in pairs for ½ hour over a period of 8 weeks. During this time teachers completed weekly ratings of classroom behavior. At the end of 8 weeks, teachers also completed a global rating, classroom behavioral observations were performed by independent observers and post-testing was completed by graduate students who were naive about group assignment.

Results

Cognitive Tests

Table 22 shows the pre- and post-test means and standard deviations for experimental and control groups on all variables. Variables from the Discriminating Battery were used to obtain a discriminate function score for each child based on weights derived from data collected in 1974-75. These scores were used to classify each child's cognitive test pattern as "normal" or "aggressive". Seven out of eight control subjects had a d-score classification of "aggressive" while 5/10 experimental subjects were so classified. These subjects will be identified as Aggressive-Control and Aggressive-Experimental respectively while the experimental subjects with d-score classifications of "normal" will be identified as Normal-Experimental.

A posttreatment discriminant score was also calculated for each of these subjects. Because of the distribution of d-score Normals and Aggressives in the experimental group, comparisons were made between Aggressive-Experimental and Aggressive-Control subjects and between Aggressive-Experimental and Normal-Experimental. These comparisons were performed on the posttreatment discriminant scores and the pre-d minus post-d scores. The means and SD's for each of these measures

are shown in Table 23 along with results of T tests.

Although findings are in the expected direction, differences between Aggressive-Experimental and Aggressive-Controls failed to reach statistical significance at the .05 level. Simil[illegible] results were obtained when these data were subjected to an analysis of covariance with the pre-d scores as covariates.

Teacher Rating Scales

Table 24 shows means and SD's on SBCL T scores for Low Need Achievement and Aggression and on number of items rated as improved on these two scales. Comparisons were first made between all treated children and untreated controls and then between groups based on pretest d-score classification. Because of wide variability within each group the Wilcoxon Rank Sum test was used to evaluate these differences. Again, results were in the expected direction but none of the differences reached statistical significance.

Weekly Behavior Ratings

A multivariate analysis of variance was used to compare Experimental and Control subjects on teachers' weekly ratings of 11 behavioral variables. Mean scores on a scale of 1 (positive) to 7 (negative) are reported in Table 25. (Appendix C contains this form.) There was some difficulty interpreting overall results of the multivariate analysis because different statistical tests yielded different interpretations. Further, our statistical consultants were unable to give very much guidance in selecting the best test. Hotelling's trace seemed most sensitive to differences in these data and, in the absence of adequate means for choosing a test, this was used. Overall comparisons between the groups were significant at the .10 level or better using Hotelling's trace for the following variables: Nature of activity ($p < .05$), frustration tolerance ($p < .005$), attitude toward work ($p < .05$), goal persistence ($p < .03$) and attention seeking ($p < .001$).

It was also of interest to determine whether the groups differed in linear and quadratic components over time. Although overall group differences might not be significant, some of the graphs suggested a downward trend (prompt early improvement) followed by a return to baseline then gradual improvement suggesting an interaction between group assignment and quadratic trend. A significant interaction between group assignment and quadratic trend was observed, however, only for cooperation, $F\ (1, 16) = 4.96$, $p < .04$.

As with previous data these findings must be interpreted

cautiously because teachers knew each child's treatment status. Hence these effects could be more a reflection of teachers' expectations than of real differences between the groups. However, if teacher expectations biased results, it was not uniform across all variables. Further, teachers did not know the d-score classification of any child. Consequently it seemed reasonable to query whether there were differences between treated d-score aggressive boys and untreated d-score aggressive, and between treated d-score aggressive and d-score normal boys. Table 26 presents the mean scores on each variable for these three groups over each week.

Because of the small numbers in each subgroup, it was decided that these data did not warrant the expense involved in performing a multivariate analysis of variance. However, visual inspection of the table suggested that any differences in these groups most likely would result from the differences between treated d-score normals and the other two groups. Further this would be of greatestinterest if it appeared at the end of treatment and not at the begining. Table 27 shows results of one-way analyses of variance done on each variable for each week.

Differences among these groups are significant at the end of treatment for activity level, cooperation and hostility. For cooperation these differences were present early and basically persisted throughout the treatment period. Since initial group differences were not evident for activity level and hostility, this analysis suggests that the differences observed at the end of treatment reflect treatment effects. It seems reasonable to conclude that aggressive boys with d-score normal classification responded to treatment with decreases in activity level and hostility while this effect was not evident for aggressive boys with a d-score aggressive pattern.

Classroom Behavior Observations

An initial discriminant function analysis performed using behavioral observation data on all experimental subjects as a group versus all control subjects separated the groups with 100% accuracy (Wilks Lambda .015 with associated Chi-square 40.11, $p < .001$). The variables contributing to this discriminant function along with means for experimental and control subjects and the standardized discriminant function coefficient are presented in Table 28 and intraclass correlations are presented in Table 29.

Since this was a posttest only measure, it was thought that the groups with different pretest cognitive patterns should also be examined. Table 30 shows the means for the most frequent categories for each of the three groups separated according to pretest d-score classification. The

difference between on-task and no-deviant behavior was also determined because of the suppression variable relationship between these two revealed by the discriminant function analysis. Since Think Aloud promoted self-vocalization as a method of self-control, it was also of interest to examine amounts of deviant behavior excluding vocalizations. This is also presented in Table 28.

Comparisons among the groups were first performed using the Wilcoxon Sum Ranks Test. Only the difference between Aggressive-Experimental and Aggressive-Control for on-task minus no-deviant was significant at the .05 level (one-tailed test). For other variables, the variance, particularly among Aggressive-Experimental subjects was significantly greater than among controls. Performing a Welch-Aspin *t* test on a Winsorized distribution for Total Deviant minus vocalization, however, yielded a *t* of 2.14, $p < .01$ (one-tailed).

PIPS

Table 31 shows means and *SD*'s on scores from the PIPS test for Experimental and Control cases while Table 32 shows this for groups defined by pretest d-score classification. As in the previous chapter, experimental cases gave significantly more aggressive solutions to the problems than controls and showed a trend toward fewer irrelevant responses. However, analysis of scores in Table 32 indicated that the latter was almost entirely due to the reduction of irrelevant chatter among Normal-Experimentals.

Discussion

The discriminant score based on cognitive tests showed a similar magnitude of change as in the previous chapter; however, with the small sample size, different metric, and greater variability, differences were only statistically significant at the .10 level and then only for Experimentals and Controls with a pretest cognitive pattern classified as aggressive. No significant differences were observed between mean *T* scores for Low Need Achievement and Aggression on the SBCL. Mean differences in improvement between Experimental and Control subjects with an aggressive cognitive pattern on pretest were comparable to findings in the previous chapter, but again because of great variability, the differences fell short of significance at the .05 level of confidence.

During classroom behavior observations the Experimental subjects with d-score aggressive classification showed significantly less discrepancy between on-task behavior and no-

deviant behavior than Control subjects with a d-score aggressive classification. Large differences in the variances were present for several variables and other comparisons failed to reach statistical significance except where Winsorized distributions were used. Weekly teacher ratings reflected significant differences favoring the treated group on a number of prosocial behaviors but more correspondence between observations and teacher ratings would have been desirable.

In general, it was concluded that the project accomplished the objective of designing and delivering the Think Aloud program with children working in dyads.

The magnitude of differences between treated and untreated controls was similar to results obtained previously but these usually did not reach statistical significance beyond the .10 level because of the small sample size and the great variability particularly among treated children. However, if the magnitude of differences persists with replication on a larger sample, statistical significance should be demonstrable at an acceptable level (Tversky & Kahneman, 1971).

Although results were not as powerful as hoped, this project was viewed primarily as a pilot project for the more extensive program planned for the spring to involve training Denver Public School teachers in program techniques. Despite less homogeneity in the study population, results were considered to be encouraging enough to support continuing with plans for training resource teachers.

Chapter XIII

A Comparison of Mediation Training and a Self-Esteem Program in Altering Cognition and Behavior in Young Aggressive Boys

Bonnie W. Camp

The final objectives of this project were 1) to determine whether the cognitive behavior modification program could be taught to elementary school teachers and 2) to determine whether changes attributable to the training program were specific to the type of program or more a reflection of the effects of individual attention.

In the process of considering elements to be introduced into an attention control program, we addressed the issue of what type of program could reasonably be offered to children with the expectation that it would be more than a waste of their valuable school time. Originally we had expected to model a second program on the work of Blank (1972). However, as we examined closely the activities and dialogues in the Blank program, the intrinsic similarities with elements in the Think Aloud program seemed too great to consider this a fair test. Consequently we turned to a different approach.

From the literature concerned with emotional factors promoting learning and behavior we selected three which seemed not to overlap with critical features of the Think Aloud program and which could be expected to have beneficial effects on the children involved. These three, relaxation, induction of a happy mood and development of positive expectations, were built into the Great Expectations program. The program itself and the rationale behind the selection of these features are described in program manual in Appendix G.

As this alternative program was developed, several additional questions became of interest. One related to whether effects of each type of program might be more pronounced for certain groups of children than others and alternatively whether children who improved with each program might be distinguishable in some fashion. The overall design was developed to permit analysis of these additional questions.

Overall Design

The basic design was a 2 x 19 x 2 hierarchical design with subjects' pretreatment cognitive status (d-score aggressive versus d-score normal) nested within treatments (Think Aloud versus Great Expectations) which in turn was nested within schools. Analysis of this full design was technically possible only for single dependent variables. Where there were multiple dependent variables or repeated measures which

were best analyzed in a multivariate fashion, the full hierarchical design was unnecessarily cumbersome. In these instances the school variable was eliminated from the analysis.

In each analysis the following five nonorthogonal planned comparisons were either examined directly through analysis of variance or similar information was obtained through analysis of covariance in which the pre-program d-score classification was introduced as a covariate. The basic four groups entering into these comparisons were identified by the program in which the children were enrolled and the pre-program d-score classification based on their cognitive tests. The four groups were Think Aloud Aggressive, Think Aloud Normal, Great Expectations Aggressive and Great Expectations Normal.

$psi_1 = \bar{X}_{TA} - \bar{X}_{GE}$

$psi_2 = \bar{X}_{TA\ Norm} - \bar{X}_{GE\ Norm}$

$psi_3 = \bar{X}_{TA\ Agg} - \bar{X}_{GE\ Agg}$

$psi_4 = \bar{X}_{TA\ Norm} - \bar{X}_{TA\ Agg}$

$psi_5 = \bar{X}_{GE\ Norm} - \bar{X}_{GE\ Agg}$

The first comparison, psi_1, was constructed to assess the effect of the two treatments irrespective of subject composition. The second comparison, psi_2, was designed to determine whether Think Aloud Normals were superior to Great Expectation Normals. The third comparison, psi_3, assessed whether Think Aloud Aggressives were superior to Great Expectation Aggressives. The fourth comparison, psi_4, was designed to determine whether Think Aloud Normals were superior to Think Aloud Aggressives and the fifth comparison, psi_5, assessed whether Great Expectation Normals were superior to Great Expectation Aggressives.

Although data were available on teacher fidelity to the Think Aloud program and on quality of classroom instruction for all children, these were not considered in the analysis. However, it was expected that these sources of variance might increase within group variability enough to obscure important between-group differences. Because of the pilot nature of the study, alpha was therefore set at .10. In each instance where Think Aloud and Great Expectations were being compared, the prediction was made that students in the Think Aloud program would be superior to students in the Great Expectations program and a one-tailed test was used. Where d-score Normal children were being compared with d-score Aggressive children a two-tailed test was used.

Subjects

Selection of teachers for Think Aloud. The Program for Pupil Assistance within the Denver Public Schools consists of 46 teachers on special assignment to work with disruptive students in elementary schools. The objectives of this research project were explained to this group of teachers and volunteers were solicited for training in Think Aloud. A total of 28 volunteered. Each volunteer was accepted if she/he obtained permission for participation from her/his principal, enlisted the interest of regular first- and second-grade classroom teachers and identified at least four children who met criteria for inclusion in the project.

From the original 28 volunteers, 19 met all criteria for inclusion in the program. They were assigned on a geographical basis to work with one of two project staff members. The Denver Public Schools provided payment for school time and inservice training for these teachers.

Selection of Teachers for Great Expectations. Each participating school was asked to nominate an aide from their community who was interested in and related warmly to children and whom they thought might be able to work with aggressive children. One school allowed the teacher aide to utilize her regular school time for work with the boys. The other 17 aides were paid an honorarium from project funds to attend one inservice and to work for ½ hour daily with a pair of children in the Great Expectations program over a period of 8 weeks.

Selection of Child Subjects. Each of the PPA teachers was given copies of the 37 items on the Aggressive scale of the School Behavior Checklist with instructions for scoring the teachers' answers. They asked regular classroom teachers to complete this scale on any children they wished to refer to the project. If the child's T score on the scale was 65 or above, they solicited parent permission for participation using the Chapter XIII form (Appendix E). When teacher checklists and parent permission on at least four children had been received at school, the material was turned over to project staff and children were randomly assigned to one of the two programs. This selection was done in late November and early December of the 1975-76 school year for beginning the program in January 1976. To replace children who moved before or after the training program began we made the following rules:

1) If a child moved before training began, he would be replaced by another child meeting inclusion criteria and program assignment would again be randomized.

2) If a child moved during the first 2 weeks of the program he could be replaced in the slot left vacant.

3) After the first 2 weeks of training, replacements would not be accepted.

Because of family moves after the first 2 weeks, five schools had only three children who completed the project. In addition, two teachers worked with three children who had served as waiting list controls in a previous project. They were included in the training because they worked in the Think Aloud program with PPA teachers but their results are not included in the data analysis. After two weeks there were 32 boys in both Think Aloud and Great Expectations. One child moved before posttesting began. Posttest results were available for analysis on 31 Think Aloud boys and 32 Great Expectations boys from 17 schools.

Dependent Measures

Pre-Post-Tests. The discriminating battery (see Chapter X) previously described was administered within 1 month prior to starting a training program. These same tests were re-administered within 1 month after completing the 8-week training program. Both pretests and posttests were administered by project staff or graduate students. However, project staff were only involved in testing at schools where they had no other contact.

Posttest only. The modified version of Shure and Spivack's (1974) Preschool Interpersonal Problem Solving Test (PIPS) described previously was administered as a posttest only by experimentally naive graduate students.

Teacher Ratings. In addition to the pre-program ratings obtained to select children, regular classroom teachers also completed the weekly ratings of behavior and post-program ratings described in Chapter XII.

Classroom Behavior Observations. Procedures for performing classroom behavior observations described in Chapter XII were used to obtain independent assessments of behavior. Three teacher aides who were naive regarding purposes of the project and two project staff members were trained to 90% agreement in observing classroom films followed by proficiency testing in practice classrooms. Each child in the project was observed in the classroom for 15 minutes on four different days. Observations on each child were performed by at least one staff member who did not know the child's assignment and one teacher aide. Observations were scheduled for reading and math periods during which students were engaged in both seatwork and group instruction. No child had fewer than 5-minute observations and most had 12 observations.

During the course of performing classroom observations, observers occasionally became very upset by teacher behavior which they observed. This prompted us to devise a simple rating scale for quality of classroom teaching behavior. Project assistants rated each classroom teacher on a scale from 1 (positive) to 5 (negative). This form is included in Appendix F.

Programs

Think Aloud. The program described in Chapter XII and detailed in Appendix H was taught to the 19 special teachers. Two months before beginning, manuals were distributed and teachers participated in a 2-hour inservice. During this inservice an overall view of the program, its goals and major techniques were presented and modeling was demonstrated. This was followed by a second, 2-hour inservice 1 month later. During the second inservice, additional materials were distributed, video tapes were shown of crucial techniques and teachers practiced key behaviors and recording procedures.

Beginning with the first week of their involvement with students in the program, teachers met for a 1-hour weekly group inservice. Their sessions with children were observed by project staff at least once weekly and project staff were available for telephone contact daily. Whenever it seemed desirable the project director also met with individual teachers.

After approximately 4 weeks in the program the project staff supervisor and each participating teacher completed a rating on fidelity to the program using the form included in Appendix F . The supervisor's rating was discussed with each teacher and compared with the self-rating. There were very few differences.

Great Expectations. Details regarding the rationale behind this program are presented in the manual in Appendix G.

Teacher aides participating in this program attended one, 1½ hour inservice after reading the manual. The general goals of the program and the three elements of relaxing, thinking happy and use of "great expectations" comments were demonstrated and discussed.

Project staff observed each aide in work with children at least once weekly and more often if necessary. Again, the project director participated directly whenever indicated and daily telephone contact was available.

Aides and teachers were asked not to discuss their respective programs with each other and to keep materials and procedures separated. Supervisors judged that this separation had been accomplished reasonably well. In fact, some were so zealous about abiding by this request that they also kept the regular classroom teacher poorly informed about the children's activities. After evaluations and posttesting were complete, teachers and aides participated in a debriefing session.

Results

D-Score Analysis

Tables 33 & 34 present means and standard deviations on each pre- and post-test variable contributing to the d-score.

These are presented for the total Think Aloud and Great Expectations groups and for the four subgroups derived from pretest d-score classification. Since the subgroups were based on d-score classification derived from these tests, comparisons of subgroups on individual variables were meaningless.

A pre- and post-test d-score was, however, derived for each child using weights supplied by a discriminant function analysis on 1974-75 data collected on aggressive and normal boys. The exact weights were slightly different from those reported in Chapter X because the base sample was approached in a slightly different fashion, i.e. all children over 72 months of age were included, no IQ variables were entered and cases were not excluded on the basis of IQ. Table 35 presents the list of variables contributing to this d-score and the standardized discriminant function coefficients. Results are essentially similar to those reported in Chapter X. Analysis of changes in test scores was therefore confined to analysis of d-scores.

This study basically employed a hierarchical design in which subjects were nested within treatments which were nested within schools. Because some cells had only one child instead of two, analysis according to this design was extremely complicated. Our computer programs able to handle the problem were limited in the number of variables which could be entered into the required matrix. The advantage of partitioning the variance according to the hierarchical design was primarily a matter of removing variability attributable to schools from the error term. To determine whether this was enough of an advantage to warrant the expense of this analysis, we selected pre and post d-scores to be subjected to this as well as to several other types of analysis.

Analysis of the hierarchical design with pre d-score as covariate was performed for 17 schools, 2 treatments and 63 subjects. In this analysis, there was a significant school effect, $\underline{F}$ (16, 28) = 1.30, $\underline{p} < .08$, and treatment effects alone were nonsignificant after correcting for pre d-score.

A second analysis was a 2 (treatments) x 63 (subjects) x 2 (measures--pre and post d-score) analysis of variance. The score x treatment group interaction was nonsignificant as were tests of simple effects on the post d-scores.

The final analysis consisted of planned comparisons derived from a one-way analysis of variance of post d-scores across four subgroups with collapsing over the school variable. This showed no significant difference between total Think Aloud and Great Expectations treated children, $\underline{F}$ (1, 59) = 1.597. Differences between Think Aloud-Normals and Great Expectation-Normals fell short of significance at the .10 level, $\underline{F}$ (1,

59) = 2.13. Interestingly, the difference in post d-scores between Think Aloud-Aggressive and Think Aloud Normal was, as might be expected, significant at the .025 level or better, F (1.59) = 6.03, $p < .025$ while the difference between Great Expectation-Aggressive and Great Expectation-Normal did not approach significance. These findings suggested that neither program produced substantial effects on the d-scores of children whose pre d-score classification was aggressive; but Think Aloud-treated aggressive boys with normal cognitive pattern tended to remain normalized in cognitive performance while they tended to move toward the aggressive pattern with the Great Expectations program. This was supported by additional findings that 6/9 Think Aloud children who changed classifications went from Aggressive to Normal classification while 7/10 Great Expectation children who changed went from Normal to Aggressive. Since this analysis yielded the most easily interpretable results despite collapsing over the school variable, it was adopted in subsequent analyses where appropriate.

PIPS

As in previous studies, the PIPS was given as a posttest only and results were subjected to a one-way analysis of variance among the four subgroups to obtain an error term for use in planned comparisons. Table 36 presents means and standard deviations for scores on this test along with results of comparisons for the total Think Aloud and Great Expectations groups.

Despite changes made in the program, overall results in this project resemble those of the earlier study. Boys in the Think Aloud group gave significantly more aggressive responses, F (1, 59) = 9.71, $p < .005$, less irrelevant talk, F (1.59) = 7.99, $p < .01$ and a higher percentage of solutions, F (1, 59) = 12.82, $p < .005$. Thus, again, increased development of alternatives and decreased irrelevancy was related to use of aggressive solutions.

When this was examined further to determine whether treatment subgroups differed in this regard, the differences in use of aggressive solutions and solutions percent remained associated with treatment, not d-score subgroup.

Think Aloud was most effective in reducing repetitions and irrelevancies in the Think Aloud-Normal group, F (1, 59) = 5.36, $p < .05$ as compared to the Great Expectation-Normal group. A similar trend was noted between Think Aloud-Aggressive and Great Expectation-Aggressive, though the F, F (1, 59) = 2.61, fell just short of significance. Interestingly, overall differences between Think Aloud and Great Expectations in total number of solutions were not significant but differences between Think Aloud-Aggressive and Great Expectation-

Aggressive were, F (1, 59) = 7.61, $p < .01$.

Overall then, differences in results on the PIPS test appear to be a reflection of differences in treatment with both d-score aggressive and d-score normal boys showing similar effects. The two subgroups appear somewhat differentially sensitive to different effects. Think Aloud-treated d-score normals showed the most striking decrease in repetitions and irrelevant talk while Think Aloud-treated d-score aggressives showed the most difference from Great Expectation-treated boys in number of different solutions elaborated.

Teacher Ratings

Global Ratings. Table 37 shows means and standard deviations for each group on the pre-Aggressive scale of the SBCL, post-Aggressive and post-LNA scales of the SBCL for the four subgroups and the total Think Aloud and Great Expectations groups. It also contains information on the number or items rated as improved or worse for each group.

There were no significant differences between the Think Aloud and Great Expectations groups or within groups on the pre-Aggressive Scale or subsets of aggressive items. Think Aloud and Great Expectations groups did not differ significantly on post SBCL T-scores on either Aggressive or LNA scales. Because possible pre-test scores on LNA could not be assumed to be similar for the four subgroups, the only comparisons made were between Think Aloud-Aggressive and Great Expectation-Aggressive and between Think Aloud-Normal and Great Expectation-Normal and these were nonsignificant.

Analysis of items improved, worse and no change did show differences between the treatment groups on the Aggressive scale. Great Expectation boys had significantly more items rated as improved, F (1, 59) = 4.95, $p < .05$ and fewer items rated as worse, F (1, 59) = 3.55, $p < .10$. Differences between d-score classifications within treatments were nonsignificant.

Weekly Ratings. Table 38 shows means for teachers' weekly ratings of Think Aloud and Great Expectation boys beginning 2 weeks before the start of programs and continuing over the 8 weeks the programs were in effect.

Visual examination of trends over the 8 weeks suggested that teachers of boys in both programs tended to rate the boys more in the direction of normal during the first 2 weeks after starting either program but that overall differences were very small between groups and between pre and terminal ratings. Judging by previous data, these results did not appear to warrant further analysis. It was concluded that

whatever differences there were between Think Aloud and Great Expectation programs were not reflected in the weekly teacher ratings.

Behavioral Observations. Earlier results indicated that Think Aloud and control groups did not differ on individual behaviors recorded during observations. However, the pattern of behavior in Think Aloud and control was distinguishable by discriminant function analysis. Consequently, this procedure was employed to analyze the current data. Results of a stepwise and direct discriminant function analysis were identical. Table 39 shows means and standard deviations for each variable along with the standardized discriminant function and centroids for each group derived from the stepwise analysis.

Table 40 presents intercorrelations among the variables entering the analysis. The associated Wilks Lambda of .768 yielded a Chi-square (13) of 14.64 significant at the .33 level. Nevertheless the d-score derived from this analysis correctly classified 22/31 boys in the Think Aloud group and 25/32 boys in the Great Expectation group. The Chi-square of 15.25 with 2 df was significant at well beyond the .001 level. It was therefore concluded that the behavioral pattern was different in the two groups.

Comparison of this analysis with the one done previously revealed several major points of similarity. As in the previous analysis, two of the most powerful variables were on-task and no-deviant behavior. Also, as previously, these variables correlated highly (.90) but contributed in different directions to the discriminant function suggesting a suppressor relationship. Thus Think Aloud boys appeared to stay on-task despite deviant behavior while Great Expectation boys were on-task primarily in association with no-deviant behavior. The type of deviant behavior appeared to differ as well. Whereas Think Aloud boys showed noise-making, vocalizing, fidgeting, getting out of seat and "other" behaviors, Great Expectation boys showed more physical aggression, open hostility and attention-getting behavior.

Discussion

Although our assessment of teacher proficiency was modest, observations and interactions with teachers during the current projectclearly indicated that the Think Aloud program could be successfully taught to elementary school teachers willing to put in time for preparation. The teachers with whom we worked were preselected to the extent that they indicated an interest

in learning a new program and this may be a sine qua non for success. Most of the teachers found some parts of the program difficult to learn, especially those involving modeling and eliciting alternative responses from the children. However, those who remained clumsy with the materials and the program usually indicated too-limited preparation for the day's lesson.

Because of its greater simplicity, the Great Expectations program appeared easily mastered. One aide experienced some difficulty assuming control with two children but worked within the program guidelines.

Given then, that the majority of teachers achieved an acceptable quality in program delivery, the main questions were whether either program was powerful enough to produce effects on dependent measures and whether the programs differed in their effects.

The first question can only be answered indirectly by comparing results on children in the present project with results on untreated aggressive or disturbed controls from previous projects. Since fewer children were involved in each of the two previous trials, data on untreated controls were combined from the first two studies to give a total of 18 boys. It is recognized that this is not strictly an equivalent control group but pre-post differences in this group can be used as a rough frame of reference for judging the magnitude of change observed in the present project. Comparable data from the different projects are summarized in Table 41.

Post SBCL T-scores for this combined group were 57.5 for LNA and 73.1 for Aggressive. These were almost identical to the Think Aloud and Great Expectations group scores. The average number of items improved on LNA was 6.5. This compared with 9.0 and 9.8 observed for the Think Aloud and Great Expectation groups respectively. On the Aggressive scale, the average number of items improved was 9.4 which compared with 8.4 and 13.5 for Think Aloud and Great Expectations respectively. Here the Think Aloud boys fell below expectancy for untreated controls.

On the PIPS the untreated controls showed an average of 7.5 solutions, 6.4 irrelevant and repetitious talk and a solutions percent of 56. These were almost identical to the comparable Great Expectation figures but different from the Think Aloud figures of 8.15 for solutions, 4.73 for irrelevant talk and 66% of solutions.

These comparisons suggest that both programs are associated with similar amounts of improvement on LNA but

improvement on Aggression only seemed associated with the Great Expectations program. On behavior observations, both groups differed from untreated controls in a similar fashion. In this instance, however, we strongly suspected that these differences may have resulted from the time of year when observations were done. Untreated controls were observed between Thanksgiving and Christmas when there was a great deal of excitement in the schools whereas the current observations were performed in the Spring when the general atmosphere was more stable.

PIPS test results, however, suggest that Great Expectation students and untreated controls are very similar while Think Aloud results are a likely reflection of the training received. D-score changes were not comparable without extensive reanalysis of earlier data to arrive at the same metric for all d-scores.

Behavior observations were performed only on eight of the untreated controls reported in Chapter XII. They showed an on-task average of 6.0 periods, no deviant behavior in 3.7 periods and average counts of total deviant behavior of 10.7. This compared to 5.5, 6.2 and 6.1 for Think Aloud and 6.8, 5.7 and 6.2 for Great Expectations. Although the amount of on-task behavior does not differ from untreated controls, both Think Aloud and Great Expectation boys show more periods in which no deviant behavior occurred and a lower total of deviant behavior.

It was also of interest to assess the relative effectiveness of the Think Aloud program for dyads as delivered by a heterogeneous group of teachers trained by project staff in relation to the individual program delivered by project staff and the dyad program delivered by project staff. This information is also contained in Table 41.

The post SBCL T-scores are again comparable from group to group. All treated groups surpass untreated controls on the number of LNA items improved with the staff-trained dyad group rated higher than the others. On aggressive items improved, the staff-dyads program and the Great Expectations program achieved comparable results while the Think Aloud-individual program and the Think Aloud-teachers' program were essentially similar to untreated controls. On the PIPS, however, all Think Aloud-untreated children show results that are similar and different from Great Expectations program children and untreated controls.

Although superior to untreated controls in effects on teacher ratings of prosocial behavior, Think Aloud-teacher program appears to be somewhat inferior to previous Think Aloud trials by project staff. Similarly, the effectiveness

of the Think Aloud-teacher program in producing improvement in aggressive behavior was closer to that seen in untreated controls.

With this evidence of a more diluted effect for the Think Aloud-teacher program on social behavior, it is, perhaps, not surprising that the differences between the Think Aloud and Great Expectations programs were few and in the case of teacher ratings, tended to favor the Great Expectations program. Further, these distinctions appeared equally or more evident in those children classified as d-score aggressive.

We are reluctant to accept these results as a basis for endorsing the Great Expectations program over the Think Aloud program, however, because of concern that the effects may have been superficial and fleeting since they were not backed up by comparable superiority in performance on cognitive or social problem-solving tests. Indeed, the suggestion that the Great Expectations program was even associated with some deterioration in test performance among d-score normals was unexpected and disturbing despite the fact that these differences did not quite reach statistical significance. It may be that the Great Expectation children were happier and generally pleasanter but tended to be less cognitively competent.

The Think Aloud and Great Expectations programs differed greatly in the demands placed on the child as well as in use of modeling and self-verbalization. Great Expectations involved concentration on the pleasurable aspects of the activities. Think Aloud involved concentrating on developing skill at achieving inhibition, a difficult and frustrating activity. In a few instances, our retrospective analyses suggested that a child was too needy to marshall his resources to meet the demands of the Think Aloud program and would perhaps have done better with Great Expectations. Likewise, we thought a few children in the Great Expectations program might have responded better to the Think Aloud program.

Since the Great Expectations program was associated with more immediate improvement in social behavior, our current thinking is that a less intense program combining Great Expectations and Think Aloud over a longer period of time might be more effective for d-score aggressive children while Think Aloud alone would be preferred for d-score normals. Further, despite the advantages of working with dyads, project staff reported some frustration with their inability to work closely enough with each child in this situation. This seemed even more problematical for teachers just learning the program. Consequently, we think the disadvantages of the dyad over the individual program outweigh the advantages for those just learning the program.

It is recognized that providing an individual program in cognitive development may be impractical in many school settings. However, many elements contained in the Think Aloud program would benefit a large number of children, aggressive or not. In addition, classroom teachers who have become acquainted with the program have requested something similar for classroom use. With a great deal of additional work, an adaptation of Think Aloud for classroom use may be feasible. If this can be developed, it is conceivable that one could reserve the individual program as a supplementary program able to concentrate more on the needs of individual children. A combined classroom and individual program would also have a potential greater effect on behaviors of interest and increase the likelihood of transfer to different situations.

Chapter XIV

Summary and Conclusion

Young aggressive boys were distinguished from normal boys on the basis of cognitive test performance in the primary grades. In contrast to older aggressive youths, the cognitive pattern of young aggressive boys did not show significant deficits in verbal abilities. However, the observation of decreased scores on nonverbal tests, greater impulsivity and greater use of immature forms of private speech suggested that use of language in verbal mediation activity was decreased or delayed in young aggressive boys. The use of cognitive classifications based on these differences was useful in subsequent studies. Behavior and response to treatment programs appeared to be different for aggressive boys with cognitive test classifications of "aggressive" and "normal". This suggested that cognitive classification might be a useful addition to current tools in evaluating children with behavior problems.

Think Aloud was developed as a program to improve self-control in young aggressive boys through use of modeling and self-guiding verbalizations to improve quality and quantity of verbal mediation activity. Initial trials with this program provided on an individual basis to a small number of aggressive boys resulted in significant improvement in cognitive test performance and teacher ratings of prosocial behavior. A second trial with pairs of children showed similar but not as powerful results.

The final large-scale trial involved teaching the Think Aloud program for dyads to 19 public school teachers and comparing results with Great Expectations, a control program designed to improve self-esteem. Results of this comparison showed many similarities in program effects with ratings generally favoring the self-esteem program while test measures favored the Think Aloud program. The two treatment groups could be distinguished on the basis of their classroom behavior pattern with Think Aloud-treated boys staying on-task despite deviant behavior while Great Expectations-treated boys showed on-task behavior when not deviant but more evidence of aggression in their deviant behavior.

Effectiveness of the Think Aloud program appeared diluted by having teachers try to work with dyads in their first attempt at using the program. The approach of providing young children with systematic training in verbal mediation activity appears to have merit and should be pursued further.

Suggested directions for future work include developing a program which combines elements of both the Great Expectations and the Think Aloud programs for use over longer periods of time with the boys showing the greatest cognitive deficits and developing an adaptation of the Think Aloud program for general classroom use.

Chapter XV

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Figure 1. Auditory reception scores for aggressive and normal boys at three ages

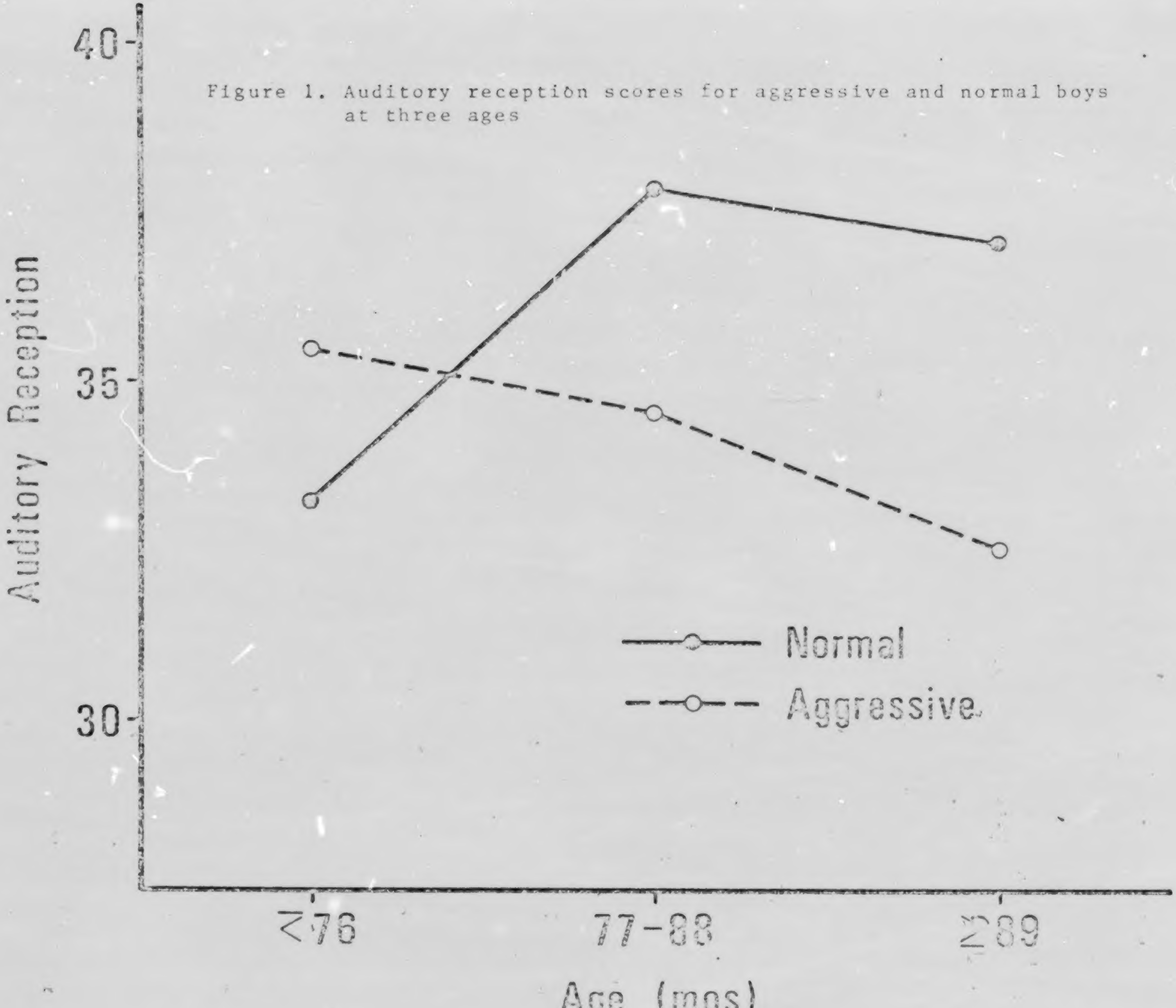
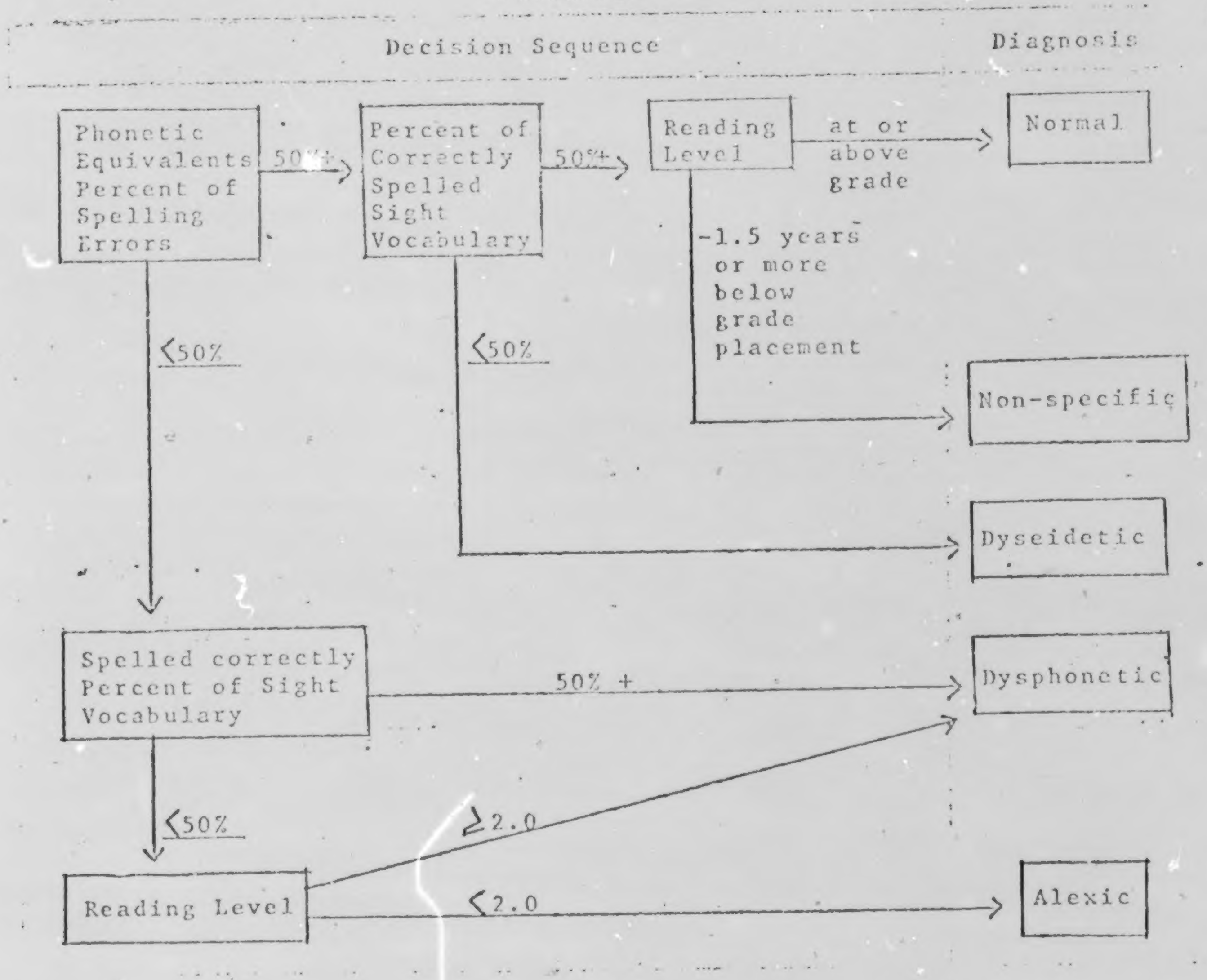


Figure 2

Sequential Decision Tree for Diagnosis of Reading and Spelling Patterns



From Camp, B. W. and Dolcourt, J.L. Reading and spelling in good and poor readers. (unpublished manuscript)

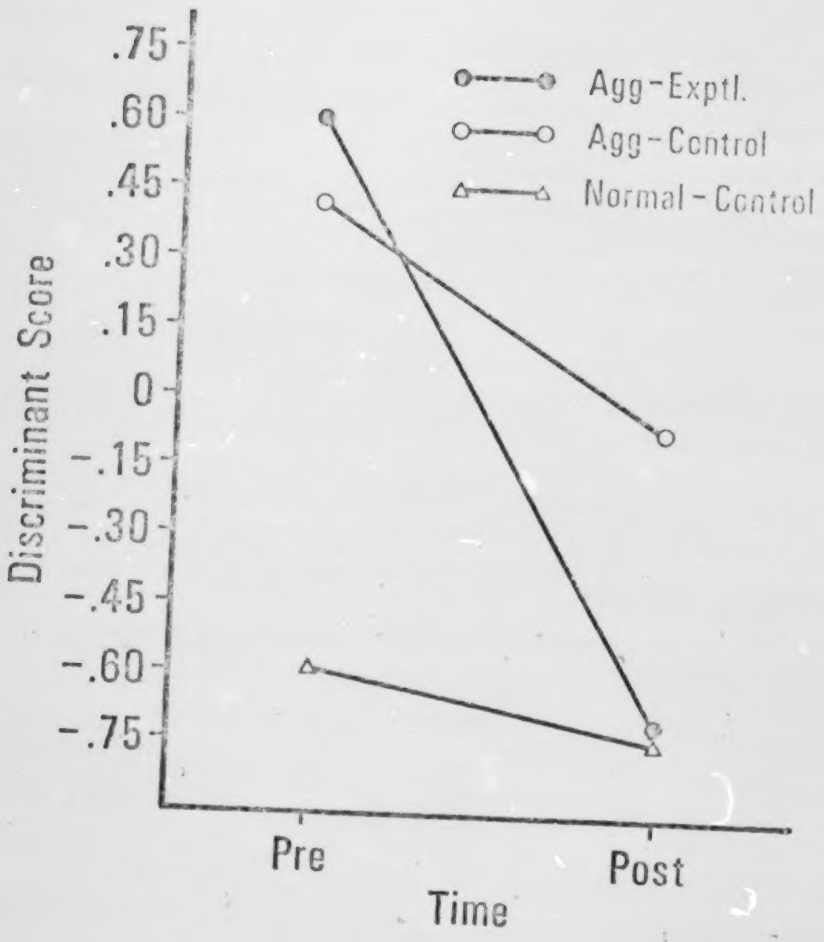


Figure 3. Pre and Post Discriminant Scores for Aggressive-Experimental, Aggressive-Control and Normal-Control Groups.

Table 1

Mean SBCL Scores for Each School for Two Age Groups

School	Age 5				Age 6			
	LNA	AGG	HI	TD	LNA	AGG	HI	TD
1	42.6	45.4	41.8	42.0	44.07	48.22	43.7	43.3
2	50.3	60.2	49.0	54.0	50.8	57.0	51.5	53.0
3	46.6	51.3	46.2	48.7	42.6	50.6	43.9	45.0
4	50.3	51.0	53.4	50.7	49.0	52.5	46.1	49.3
5	43.9	50.8	46.0	46.1	47.1	51.7	49.7	48.9
6	47.6	53.9	47.4	49.4	47.5	53.0	56.0	50.3
7	53.2	51.9	47.4	51.7	49.3	51.0	47.1	49.3
8	43.9	46.5	41.0	44.4	50.4	52.7	43.6	50.5

Table 2

SBCL and Boehm Scores

for Three Aggressive Groups

Test	Aggressive Group			F	df	p	P
	Normal	Borderline Aggressive	Aggressive				
SBCL							
LNA	46.3	53.1	59.0	135.2	2,990	.001	.46
AGG	47.1	65.0	79.5				
Anx	48.1	50.0	51.6	7.2	2, 9		.12
AD*	46.1	50.8	50.8	17.29	2,617	.001	.19
HI	46.3	49.7	55.6	68.0			.34
Ext	49.5	58.1	56.7	43.8			.26
TD	45.8	58.1	68.6	636.0			.75

*Kindergarten excluded

Test	Normal	Borderline Aggressive	Aggressive	F	df	p	P
Boehm							
Total	40.8	38.5	40.6	3.15			-.03
Q	13.6	12.9	13.4	2.02			-.04
S	20.0	19.1	19.9	3.23			-.03
Age	6.1	6.2	6.5	8.678			.13

Table 3

Correlations Between SBCL and Boehm

for Hyperaggressive Group

Test	Boehm Score Total	Q	S
LNA	-.29	-.17	-.29
Anx	-.42	-.27	-.43
AD	-.11	-.01	-.21
HI	-.29	-.22	-.32
Ext	.28	.24	.28
TD	-.37	-.24	-.40

Table 4

Correlations Between Boehm and SBCL

for Four Age Groups

	Age 5			Age 6			Age 7			Age 8		
	Total	Q	S	Total	Q	S	Total	Q	S	Total	Q	S
LNA	-.42	-.36	-.38	-.29	-.25	-.25	-.25	-.19	-.25	-.25	-.22	-.31
AGG	-.07	-.08	-.06	-.15*	-.16*	-.09	-.13	.08	-.18	-.34	-.31	-.38
ANX	-.32	-.28	-.30	-.24	-.16	-.25	-.12	-.05	-.13	.02	-.008	-.008
AD	-.31	-.25	-.27	-.37	-.30	-.36	-.23	-.19	-.23	-.29	-.23	-.34
HI	-.22	-.16	-.25	-.19	-.17	-.18	-.06	-.02	-.11	-.21	-.19	-.24
Ext	.06	.06	.06	.02	-.003	.06	.09	.07	.11	.18	.18	.05
TD	-.15	-.13	-.16	-.30	-.26	-.25	-.23	-.15	-.27	-.36	-.32	-.43

Table 5

Correlations Between Aggressive Score (SBCL)

and Boehm for Four Age Groups

Age	n	Boehm			p
		Total	Q	S	
5	202	-.07	-.08	-.06	ns
6	291	-.15	-.16	-.09	.004
7	268	-.13	.08	-.18	.01
8	69	-.34	-.31	-.38	.001

Table 6

Unrotated Percents of Variance Accounted for by the First Five SBCL Factors

Factor	Miller (1972)*	Ranges for the Present Five-Factor Analyses
AGG	9.5	25.7 - 27.1
LNA	21.3	9.6 - 11.1
EXT	2.5	4.1 - 4.5
HI	2.5	3.2 - 3.5
ANX	4.6	2.7 - 2.9
Totals	40.4	46.0 - 48.3

*Not shown is the AD factor which accounted for 2.5 percent of variance in Miller's (1972) analysis.

Table 7

Item Content of Nine Stable Clusters across Two Samples with Root-one Factor Analyses*

I. TASK-ORIENTED BEHAVIOR

Attentiveness, Concentration, Academic Seriousness

SBCL item number	Item description (paraphrased)	SBCL factor assignment
6.	Helpful	LNA
7.	Alert in class	LNA
12.	Volunteers to recite	LNA
22.	Does homework	LNA
27.	Sure of self	LNA, ANX
38.	Works well alone	LNA
48.	Able to concentrate	LNA
64.	Interested in school work	LNA
76.	Finishes assignments	LNA
85.	Self-confident	LNA,ANX

Low Ambition, Distractibility

SBCL item number	Item description (paraphrased)	SBCL factor assignment
2.	Gives up when work is hard	LNA
8.	Poorly coordinated with hands	LNA
16.	Approaches tasks with defeatism	LNA
18.	Fails to carry out tasks	LNA
19.	Lacks ambition for school	LNA
33.	Off in own world	LNA
36.	Finds it hard to study	LNA
40.	School performance far below abilities	LNA
44.	Will not ask when in need of help	LNA
52.	"Drags feet"	LNA
57.	Distractible	LNA
70.	Immature behaviors	LNA
91.	Bright but underachieves	LNA

II. HOSTILITY

Attention-seeking

SBCL item number	Item description (paraphrased)	SBCL factor assignment
3.	Interrupts whomever is speaking	AGG, EXT
35.	Likes an audience all the time	AGG, EXT
46.	Never still for a moment	AGG, EXT
51.	Tries to be the center of attention	AGG, EXT
66.	Attracts attention to himself	AGG, EXT
78.	Interrupts with silly questions	AGG
92.	Boisterous -- disturbs others	AGG

(continued on next page)

* Headings in capitals are Schaefer (1971) dimensions. Secondary headings are Schaefer traits which define these dimensions. See text for explanation.

Table 7

(continued from preceding page)

II. HOSTILITY (continued)

Belligerence

5.	Starts fighting over nothing	AGG
11.	Acts up when I am not watching	AGG
13.	Hits and pushes	AGG
15.	Finds fault with what other children do	AGG
17.	Considerate (scored in opposite direction)	AGG
20.	Gets others angry	AGG
23.	Teases other children	AGG
25.	Bossy	AGG
28.	Abusive language	AGG
30.	Gives in when another child insists (scored opp)	AGG
31.	No respect for other's belongings	HI
49.	Boasts of own toughness	AGG
59.	Fights with smaller children	AGG
65.	Gets others in trouble	AGC
72.	Threatens to hurt when angry	AGG
74.	Does not take orders from other children	HI
82.	Unconcerned when misbehaving	AGG, LNA
87.	Acts in a "dare-devil" fashion	AGG

Irritability

21.	Puts up an argument when told he cannot do something	AGG
29.	Changeable moods	AGG
32.	Does not forget what angers him	HI
34.	Infuriated with discipline	AGG
37.	Has to have everything his own way	AGG
39.	When angry refuses to speak	AGG
47.	Argues with teacher	AGG
53.	Accepts my suggestions (scored opp)	LNA
54.	Sulks when things go wrong	AGG
56.	Resents criticism	AGG, EXT
62.	Stubborn	AGG
77.	Gives children dirty looks	AGG
81.	Finds fault with instructions	AGG
86.	Slams desk when angry	AGG
89.	"Chip on shoulder"	AGG, EXT

(continued on next page)

Table 7

(continued from preceding page)

III. EXTRAVERSION vs. INTROVERSION

Cheerfulness		
1.	Friendly	EXT
6.	Helpful	LNA
41.	Has no friends (scored opp)	HI
50.	Thinks of self as worthless (scored opp)	ANX
58.	Sees bright side of things	EXT, LNA
69.	Popular	LNA
79.	Slow in making friends (scored opp)	ANX
80.	Happy	EXT
Self-consciousness		
14.	Nervous when asked to recite	ANX
24.	Afraid to make mistakes	ANX
26.	Easily upset by changes	ANX
55.	Frightened easily	ANX
61.	Fearful of being hurt at play	ANX
83.	Cries easily	ANX
84.	Afraid of strange adults	ANX
88.	Difficulty speaking clearly when excited	ANX
90.	Becomes easily embarrassed	ANX
95.	Much anxiety -- phobias, fears	ANX
96.	Complains of frequent headaches, other somatic complaints	ANX
Social Withdrawal		
10.	Sits around on playground	ANX
68.	Prefers adults to children	ANX
75.	Plays alone	ANX
Submissiveness		
45.	Fights back if another child pesters him (scored opp)	AGG
63.	Never speaks up when he has every right to be angry	HI
67.	Never fights back	HI
71.	Never sticks up for himself	HI

Table 8

Mean test scores for Aggressive and Normal boys at three ages

Test	Group						Analysis of Variance (F values)		
	76 months (n = 20)		77-88 months (n = 22)		89+ months (n = 29)		Agg (1, 68)[a]	Age (2, 68)[a]	Agg x Age (2, 68)[a]
	Agg	Norm	Agg	Norm	Agg	Norm			
WISC									
Information	9.3	9.9	10.0	11.3	8.8	10.6	7.246**	1.986	ns
Comprehension	10.3	9.9	9.4	10.7	9.8	9.9	ns	ns	1.227
Similarities	10.6	11.6	11.3	12.6	11.1	12.0	4.07*	ns	ns
Vocabulary	9.2	9.5	9.4	9.5	9.4	9.5	ns	ns	ns
VIQ	99.2	101.1	100.4	106.9	98.9	103.3	3.898	ns	ns
Block Design	11.6	11.3	10.8	11.9	10.2	12.2	5.374*	ns	3.100
Object Assembly	11.3	12.1	11.6	10.4	11.4	12.8	ns	2.404	3.609*
Mazes	10.2	11.7	10.6	11.0	10.0	10.3	8.798**	1.842	1.934
PIQ	107.1	111.5	107.1	107.6	103.7	112.5	6.585*	ns	1.787
FIQ	103.3	106.7	103.5	107.7	101.3	108.0	8.005**	ns	ns

Table 8 (continued)

Test	Group						Analysis of Variance (F Values)		
	76 months (n = 20)		77-88 months (n = 22)		89+ months (n = 29)		Agg (1, 68)[a]	Age (2, 68)[a]	Agg x Age (2, 68)[a]
	Agg	Norm	Agg	Norm	Agg	Norm			
PA-err	14.8	16.4	17.1	16.0	14.0	15.5	ns	1.177	ns
$SL\text{-}T_{1-3}$	17.7	18.4	16.7	15.8	14.9	15.5	ns	5.061**	ns
SL-TTC	9.5	10.0	8.4	8.1	8.6	7.0	ns	3.46*	1.23
SL-Tot err	33.9	37.4	28.6	26.5	27.2	23.2	ns	6.227**	1.125
Optional Shift									
Initial Trials	21.9	25.6	19.9	18.8	24.9	21.2	ns	ns	ns
Mediation Responses[b]	6.7	6.5	8.5	6.6	7.2	6.2	ns[b]	ns[b]	ns[b]
Wepman	5.1	5.6	5.0	4.5	3.6	4.1	ns	1.89	ns
ITPA									
Auditory Reception	35.4	33.1	34.4	37.9	32.3	37.0	6.319*	1.18	7.853**
Visual Memory	37.7	38.5	36.5	37.6	36.5	39.6	2.704	ns	ns
Visual Association	37.3	40.2	37.1	37.6	35.0	36.5	3.587	2.249	ns

Table 8 (continued)

Test	Group						Analysis of Variance (F values)		
	76 months (n = 20)		77-88 months (n = 22)		89+ months (n = 29)		Agg (1, 68)[a]	Age (2, 68)[a]	Agg x Age (2, 68)[a]
	Agg	Norm	Agg	Norm	Agg	Norm			
Visual Expression	41.5	38.6	36.5	35.6	36.0	35.4	1.613	4.437*	ns
Grammatic Closure	36.1	35.7	33.7	36.5	30.8	34.5	4.141*	2.484	1.547
WRAT	1.1	1.1	1.8	2.1	2.7	3.3	4.331*	38.3**	1.185
Boehm Test of Basic Concepts	36.6	35.7	43.0	42.9	44.9	46.5	ns	29.77**	1.601
SES	68.3	66.1	72.2	73.3	71.4	71.5	ns	2.726	ns

Note. F values < 1.0 are indicated by ns

[a]degrees of freedom

[b]Because of missing data, repeated measures analysis of variance could not be performed.

*$p < .05$

**$p < .01$

Table 9

Means and standard deviations for scores on two optional shift procedures (CK and KK)

Scores	Optional Shift Procedures					
	CK			KK		
	$\bar{X}$	SD	N	$\bar{X}$	SD	N
Med Responses	8.29	2.64	80	7.13	4.20	80
Non-Test Trial Errors	.54	1.25	90	.51	1.31	81
Prod Errors	.217	.415	60	.07	.26	82
Control Errors	.083	.279	60	.09	.28	82

Table 10

Mean and S.D. for Performance on Simon Says

Variable	Mean	S.D.	N
Performance Errors	.08	.07	92
Non-Performance Errors	2.09	2.50	92
Total Incipient	1.42	1.25	92
SS Items	.01	.01	
Non SS Items	1.42		
Total Errors	2.12	2.45	92

Table 11

Correlations between scores on two optional shif procedures

(CK and KK)

	CK Non-Test Trial Errors	KK Non-Test Trial Errors	KK Production Errors	KK Control Errors	SES
Age	-.15 (n=90)	.08 (n=82)	-.04 (n=82)	.01 (n=82)	-.00 (n=92)
CK NON-Test Trial Errors		.04 (n=80)	-.04 (n=80)	-.02 (n=80)	-.03 (n=90)
KK Non-test Trial Errors			-.04 (n=82)	.18* (n=82)	.10 (n=82)
KK Production Errors				-.09 (n=82)	-.04 (n=82)
KK Control Errors					-.05 (n=82)

*$p < .05$

Table 12

Means and standard deviations of Simon Says variables and errors on optional shift for children categorized by mediating performance

Variable	Mediating Performance: Med Both			Med CK Alone			Med KK Alone			Non-Med Both			F
	N	$\overline{X}$	SD	N	$\overline{X}$	SD	N	$\overline{X}$	SD	N	$\overline{X}$	SD	
Performance trial errors	42	.071	.26	17	.118	.33	12	.083	.29	9	.111	.33	NS
Inhibition trial errors	42	1.8	2.4	17	2.6	2.9	12	1.8	2.7	9	2.22	1.5	NS
Total incipient	42	1.5	1.2	17	1.4	1.6	12	1.3	1.2	9	1.7	.87	NS
Total errors	42	3.3	2.6	17	4.1	2.8	12	3.2	3.0	9	4.0	1.5	NS
CK Production errors	32	.34	.48	10	.20	.42	11	0		7	0		2.88
CK Control errors	32	0		10	0		11	.36	.50	7	.14	.38	6.48*
KK Production errors	42	.12	.33	17	0		12	.08	.29	9	0		NS
KK Control Errors	42	0		17	.35	.49	12	0		9	.11	.33	8.58*

*$P < .01$

Table 13

Descriptive statistics on various reading groups

Groups	n	Age		WRAT Grade		Boder A Grade		Boder B Grade	
		$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Grade 2									
Boder-WRAT	33	8.1	.3	3.5	1.3	3.7	2.0	3.0	1.5
Boder-Boder	33	8.1	.4	-	-	3.3	1.8	3.2	1.5
Grade 4-6 *									
High Readers	18	10.7	.3	7.5	1.5	7.4	.6	7.5	.5
Average Readers	14	10.8	.6	4.7	.5	5.0	.6	-	-
Low Readers	20	11.1	.8	2.9	.7	3.0	1.1	-	-

*From Camp & Dolcourt (in press)

Table 14

Frequency of reading-spelling patterns at three levels of reading skill

Pattern	Reading Level: High	Average	Low
Normal	12	1	0
Dyseidetic	5	2	0
Dysphonetic	2	5	6

Table 15

Percentage of children at each reading level making Control and Bizarre errors

	Type of Errors	
Reading Level	Control	Bizarre
High	84%	26%
Average	100%	50%
Low	100%	100%

Table 16

Group characteristics on background variables

Variables	Aggressive				Normal			
	Total (n = 49)		PIQ $\geq$ 90 (n = 35)		Total (n = 46)		PIQ $\geq$ 90 (n = 38)	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
VIQ	93	13.8	95	14.2	96	10.6	97	10.3
PIQ	99	12.7	104	10.0	103	12.2	107	9.8
FIQ	95	11.9	99	10.9	99	10.6	102	9.4
WRAT	2.1	.9	2.1	.9	2.2	.9	2.2	1.0
SBCL - *T* scores								
LNA	59	9.0	57	8.6	44	6.0	44	6.2
ANX	54	9.7	53	9.3	44	3.7	44	3.6
EXT	57	14.5	59	15.1	48	4.0	48	3.8
Total	69	7.7	67	7.6	43	4.1	43	4.2
SES	59	15.9	59	16.7	61	16.7	60	16.5

Note. Prorated Verbal IQ (VIQ), Performance IQ (PIQ), Full Scale IQ (FIQ); Reading achievement (WRAT); Low Need Achievement (LNA); Anxiety (ANX); Extroversion (EXT); Socioeconomic status (SES)

Table 17

Group means, standard deviations, F values for univariate group comparisons and standardized discriminant function coefficients

Variables	Aggressive		Normal			
	$\overline{X}$	S.D.	$\overline{X}$	S.D.	F	d
FTOVT	20.3	6.8	22.[illegible]	8.9	1.749	1.220
IMM	12.3	16.0	4.8	8.2	6.436**	-.866
FT-BASE	44.7	9.2	40.7	7.7	3.881*	-.851
MF-IRR	1.4	1.8	.6	1.0	5.735**	-.606
WRAT	2.1	.9	2.2	1.0	.197	.566
PIQ	104.6	10.1	106.5	9.7	.601	.506
AVRT	10.3	5.2	14.8	7.3	8.286***	.501
SS-NON	1.7	1.3	1.1	1.3	3.218*	-.466
VOCAB	9.3	2.9	9.1	2.0	.242	-.458
FT-COVT	22.8	8.8	23.9	8.5	.288	-.453
SOC	12.7	12.8	6.6	11.3	4.386**	.445
MF-INN	1.3	2.3	.9	2.3	.516	.440
INFO	9.2	3.1	9.7	2.7	.505	.304
DIGIT	8.4	3.0	9.4	2.6	2.33	.039
Centroid	-1.125		.947			

Note. Refer to Table 3 for meaning of abbreviations

* $p < .10$

** $p < .05$

*** $p < .01$

Table 18

Intraclass correlation coefficients for variables included in discriminant function analysis

	FT-OVT	IMM	FT-BAS	MF-IRR	WRAT	PIQ	MF-RT	SS-NON	VOCAB	FT-COV	SOC	MF-INN	INFO
FT-OVT	1.00												
IMM	.12	1.00											
FT-BAS	.21	-.00	1.00										
MF-IRR	.05	.40	-.18	1.00									
WRAT	-.26	.21	.13	.08	1.00								
PIQ	-.14	.09	-.11	.23	.04	1.00							
MF-RT	-.21	-.06	-.02	.07	-.07	-.02	1.00						
SS-NON	.16	-.09	-.00	-.04	-.04	.09	-.02	1.00					
VOCAB	-.07	.09	-.09	.16	.22	.35	-.04	-.17	1.00				
FT-COV	.75	.01	.01	-.03	-.05	-.12	-.21	.18	-.09	1.00			
SOC	-.03	.64	.21	.02	.07	-.09	-.13	-.02	-.12	-.05	1.00		
MF-INN	-.09	.36	.15	.49	.15	.01	.17	-.00	.10	-.25	.11	1.00	
INFO	.01	.17	.15	.17	.31	.13	.03	-.12	.56	-.07	.02	.04	1.00
DIGIT	-.20	.00	.06	.03	.42	.31	-.16	-.06	.46	-.19	.05	.01	.39

Note. Abbreviations are as follows: Finger tapping - overt command "slow" (FT-OVT); Word play + Outer speech (IMM): Baseline finger tapping speed (FT-BAS); Irrelevant speech - MFF (MF-IRR); Reading achievement (WRAT); prorated Performance IQ (PIQ); Average reaction time - MFF (MF-RT); Simon-Says errors - non-facing (SS-NON); WISC-R Vocabulary (VOCAB); Finger-tapping - covert command "Slow" (FT-COV); Social speech (SOC); Inner-directed speech - MFF (MF-INN); WISC-R Information (INFO); WISC-R Digit span (DIGIT)

Table 19

Pre- and Post-test means and F-values for planned nonorthogonal contrasts on adjusted means

Tests	Pre-test Group			Post-test Group			F Contrasts	
	A - E n = 12	A - C n = 10	N - C n = 12	A - E n = 12	A - C n = 10	N - C n = 12	A (A-Exp vs. A-Con)	B A-Exp vs. N-Con)
SBCL-AGG	71.0	75.2	46.0	69.2	74.2	47.3	ns	6.54*
SBCL-LNA	58.9	57.7	42.4	57.6	57.1	41.4	ns	ns
WISC-R Tests								
Block Design	7.9	9.2	9.0	9.2	9.7	9.7	ns	ns
Object Assembly	9.3	9.2	10.3	10.0	10.4	12.1	ns	3.38
Mazes	8.7	10.0	10.3	13.0	10.0	11.3	6.96*	5.77*
PIQ	90.7	95.8	98.6	104.6	99.7	106.3	3.51	ns
ITPA								
Auditory Reception	29.0	34.7	38.7	32.6	35.8	33.7	ns	ns
WRAT	2.1	2.6	2.7	2.5	2.7	3.3	4.08	ns
WISC-R Private Speech								
Immature	3.8	12.7	4.8	5.2	3.1	1.9	3.89	ns

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Table 19

(continued)

Tests	Pre-test Group			Post-test Group			F Contrasts	
							A	B
	A - E n = 12	A - C n = 10	N - C n = 12	A - E n = 12	A - C n = 10	N - C n = 12	(A-Exp vs. A-Con)	(A-Exp vs. N-Con)
Mature	30.7	30.2	18.4	8.1	8.0	8.0	ns	ns
Social	10.8	9.5	7.3	3.4	5.7	1.8	2.99	ns
MFF								
Inner Speech	1.3	.5	.6	.6	.8	1.2	ns	ns
Other Speech	2.9	1.9	.4	13.0	11.0	3.9	ns	5.76*
Relevant Speech	2.5	1.9	.8	7.2	6.7	2.7	ns	4.72*
Irrelevant Speech	.5	.7	.2	.6	1.0	.3	ns	ns
Time (AVERAGE)	10.1	9.7	11.5	17.1	10.6	11.2	6.39*	5.89*
Errors (TOTAL)	18.7	19.3	14.9	12.6	14.2	11.2	ns	ns
Impulsivity	.43	.58	-.36	-.31	.35	.05	4.69*	ns
Efficiency	.03	.04	-.23	.30	-.05	-.25	ns	3.86

Note. F values with $p > .10$ are reported as ns

*$p < .05$

**$p < .01$

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Table 20

Standardized discriminant function coefficients derived from analysis of test patterns in Aggressive and Normal boys

Measure	Coefficient
MFF-IRREL SPEECH	.46
MFF-Average Response Time	-.44
WISC-IMM SPEECH	.40
WISC-Mazes	-.36
ITPA - Auditory Reception	-.32
MFF - Errors	.30
WISC- Object Assembly	-.15
WRAT - Reading grade	-.15
WISC - Social Speech	-.09
WISC - Mature Speech	-.05
MFF - Revelant Speech	.05
WISC - Block Design	-.02
Centroid	
Aggressive	.49
Normal	-.49

Table 21

Comparison of post-treatment PIPS scores in three groups

Category	Group Means			F Contrasts	
				A	B
	A - E n = 12	A - C n = 10	N - C n = 13	(A - E vs. A - C)	(A - E vs. N - c)
Total solutions	8.8	7.2	6.4	5.66**	14.55***
Total other talk	5.5	7.6	5.5	ns	ns
SOL/SOL + TALK	.659	.509	.551	3.65*	ns
AGG SOL/Tot Sol	.241	.057	.038	8.26***	11.50***

*p < .10

**p < .05

***p < .01

Table 22

Means and standard deviations of pre- and post-test scores for experimental and control groups

Variable	Pre-Exp		Post-Exp		Pre-Cont		Post-Cont	
	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
WISC-R								
Digit	8.7	2.312	9.0	2.867	8.0	1.773	7.4	2.326
Vocabulary	8.8	1.989	10.7	1.947	9.0	3.207	8.5	3.207
BD	7.6	3.438	9.9	2.767	9.25	2.315	10.3	2.188
OA	11.3	3.129	12.3	2.214	9.0	2.204	10.6	3.114
Mazes	9.1	3.213	12.6	2.797	8.5	2.976	10.5	2.390
PIQ	95.1	19.807	111.0	13.606	92.4	15.811	102.8	12.915
ITPA								
Aud-Rec	37.0	5.831	36.0	4.807	31.9	7.864	34.8	8.548
WRAT-G.E.	1.84	1.663	2.0	1.677	1.49	.368	1.6	.722
SES	55.7	19.602	55.7	19.602	51.5	20.410	48.6	18.477
MFF Private Speech								
MFF-IN	.8	1.549	.9	.994	2.1	2.475	1.0	1.309
MFF-OTH	8.7	11.285	3.1	2.514	11.8	7.686	4.9	6.128
MFF-REL	3.4	3.836	2.3	1.889	6.8	4.301	5.1	4.883

Table 22

(continued)

Variable	Pre-Exp		Post-Exp		Pre-Cont		Post-Cont	
	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
MFF-IRR	1.9	2.331	1.3	1.059	1.6	1.685	.4	.518
MFF-INS	1.0	1.563	.6	.843	.1	.354	.5	1.069
Finger Tap								
FT-BASE	38.0	7.517	42.3	9.370	39.4	10.569	40.9	13.737
FT-OVG	17.78	4.738	19.4	3.534	20.9	4.291	19.6	4.534
FT-OVT	24.22	8.997	25.7	7.987	25.0	5.855	26.6	16.379
FT-COVG	19.44	3.539	18.1	3.985	23.1	5.083	20.1	4.883
FT-COVT	30.0	12.104	25.4	11.266	27.4	6.696	31.8	27.4
MFF Response Time & Errors								
MFF-RT	10.2	2.781	12.3	5.519	12.4	6.186	9.6	3.204
Errors	21.0	6.815	16.1	5.953	17.3	5.007	16.2	3.495
Age	86.2	6.713	88.3	6.717	85.3	8.242	87.2	8.242

Table 22

(continued)

Variable	Pre-Exp		Post-Exp		Pre-Cont		Post-Cont	
	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
Private Speech								
(WISC-R)								
Immature	6.9	9.469	13.0	17.257	11.3	13.833	31.2	37.907
Mature	25.1	29.794	20.1	12.037	23.8	21.299	52.4	35.284
Social	2.3	2.710	8.7	8.945	3.1	3.682	9.9	9.061
Simon Says								
SS-FACE	2.2	1.549	1.3	1.252	1.9	1.356	.5	.756
SS-NON	1.5	1.179	.8	.789	1.4	1.302	.6	1.188

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Table 23

Pre- and post-treatment discriminant scores

D-scores

	Pre		Post		Pre and post Difference	
Groups	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Agg-Exp	2.45	1.70	.80	1.52	1.66	1.54
Norm-Exp	-.66	.58	-1.25	1.84	.59	1.56
Agg-Con	1.58	1.20	1.64	2.03	-.06	1.91

t Values

Comparisons			
Agg-Exp vs. Agg-Con	ns	ns	1.72**
Agg-Exp vs. Norm-Exp	--	1.92*	ns

*$p < .05$ one-tailed

**$p < .10$ one-tailed

Table 24

Means and standard deviations for T-scores on teacher rating scales

Group	low need for achievement		Aggression		# improved Low Need Achievement		# improved Aggression	
	X	SD	X	SD	X	SD	X	SD
Aggressive-Experimental	55.8	8.68	73.4	8.01	15.6	6.5	15.6	11.1
Normal-Experimental	51.8	8.93	70.6	11.30	12.2	7.7	13.8	11.2
Aggressive-Control	57.9	7.66	72.1	7.77	9.1	8.1	7.9	8.1

Table 25

Weekly teacher ratings for boys in Experimental and Control groups

Variables	Weeks							
	1	2	3	4	5	6	7	8
Activity Level								
Experimental	6.0	5.4	5.9	5.5	5.4	5.5	5.1	5.1
Control	6.4	5.9	6.1	5.9	5.7	5.9	5.9	6.0
Nature of Activity								
Experimental	5.8	5.9	5.9	5.3	5.3	5.2	5.1	5.4
Control	5.7	5.9	6.1	5.5	5.6	5.9	5.5	5.6
Attention Span								
Experimental	5.1	5.7	5.6	4.9	5.0	5.1	4.3	4.5
Control	6.1	5.0	5.5	5.4	5.1	4.5	4.5	4.7
Verbal Communications								
Experimental	5.0	5.2	5.6	5.0	5.1	5.3	4.7	4.7
Control	4.4	5.4	5.4	5.9	5.1	5.6	5.1	5.4
Cooperation								
Experimental	4.5	5.0	5.2	4.9	4.6	4.5	4.5	4.5
Control	5.9	5.7	5.5	5.1	5.0	5.0	5.0	5.1
Hostility								
Experimental	4.6	4.8	5.4	4.6	4.6	4.8	4.7	4.7
Control	5.4	4.9	5.1	5.3	5.1	5.1	5.3	5.5
Frustration Tolerance								
Experimental	5.0	5.3	5.5	4.9	4.6	4.6	4.5	4.9
Control	5.6	5.6	5.3	5.1	5.1	5.1	5.7	5.5

Table 25 (continued)

Variable	Weeks							
	1	2	3	4	5	6	7	8
Dependency								
Experimental	5.5	5.1	5.2	5.0	5.4	5.1	5.0	5.1
Control	5.5	4.6	6.0	4.9	5.0	5.3	5.0	5.2
Work Attitude								
Experimental	4.8	4.7	4.6	4.3	5.0	4.8	4.7	4.5
Control	5.9	5.7	5.9	5.1	5.1	5.4	5.1	5.0
Goal Persistence								
Experimental	4.7	4.9	4.8	5.3	5.0	5.1	4.7	4.9
Control	5.9	5.4	5.3	5.1	5.0	5.1	4.9	4.7
Attention Seeking								
Experimental	5.5	5.9	5.5	5.8	5.2	5.3	5.1	5.4
Control	6.6	6.5	6.1	6.1	6.3	6.5	5.9	6.1

Table 26

Mean scores on weekly teacher ratings for treated and control children filed according to pretest d-score

Variable		Weeks							
		1	2	3	4	5	6	7	8
Activity Level	E-Agg	6.4	6.2	6.4	6.0	5.8	5.4	4.9	5.6
	E-Norm	5.6	4.6	5.4	5.0	5.0	5.7	5.3	4.7
	C-Agg	6.4	5.9	6.1	5.9	5.7	5.7	5.9	6.0
Nature of Activity	E-Agg	6.2	6.2	6.4*	5.6	5.8	5.2	5.3	5.6
	E-Norm	5.4	5.6	5.4	5.0	4.8	5.2	5.0	5.2
	C-Agg	5.7	6.1	6.3	5.6	5.7	5.9	5.6	5.6
Attention Span	E-Agg	5.0	5.4	5.8	5.0	5.2	5.2	4.0	4.8
	E-Norm	5.2	6.0	5.4	4.8	4.8	5.0	4.6	4.2
	C-Agg	6.4	5.1	5.7	5.6	5.3	4.6	4.6	4.9
Verbal Communication	E-Agg	5.2	5.2	6.4	5.2	5.6	5.4	4.4	4.6
	E-Norm	4.8	5.2	4.8	4.8	4.6	5.3	5.1	4.9
	C-Agg	4.4	5.3	5.3	5.9	5.0	5.6	5.0	5.6
Cooperation	E-Agg	5.4	5.6	6.2	5.4	5.6	5.0	5.1	5.2
	E-Norm	3.6	4.4	4.2	4.4	3.6	4.0	3.9	3.7
	C-Agg	5.7	5.6	5.3	5.0	4.7	4.7	4.9	5.0
Hostility	E-Agg	5.0	5.0	6.4	5.4	5.4	5.2	5.2	5.2
	E-Norm	4.2	4.6	4.4	3.8	3.8	4.4	4.3	4.1
	C-Agg	5.1	4.7	5.0	5.1	5.0	5.0	5.1	5.4
Frustration Tolerance	E-Agg	4.8	5.4	6.2	5.6	5.2	4.8	4.6	5.4
	E-Norm	5.4	5.0	5.0	4.0	4.0	4.0	4.3	4.7
	C-Agg	5.9	5.6	5.3	5.3	5.3	5.3	5.9	5.7

Table 26 (continued)

Variable		Weeks							
		1	2	3	4	5	6	7	8
Dependency	E-Agg	5.6	5.0	5.6	5.4	5.8	5.2	5.5	5.2
	E-Norm	5.2	5.4	4.6	4.8	5.0	5.5	4.5	4.7
	C-Agg	5.8	4.9	6.3	5.0	5.1	5.4	5.1	5.3
Work Attitude	E-Agg	5.2	5.2	5.2	4.8	5.4	5.2	5.0	4.6
	E-Norm	4.4	4.2	4.0	3.8	4.6	4.4	4.5	4.5
	C-Agg	6.3	6.0	6.1	5.3	5.3	5.6	5.3	5.1
Goal Persistence	E-Agg	5.2	5.2	5.4	5.6	5.4	5.4	4.8	5.0
	E-Norm	4.2	4.6	4.2	5.0	4.6	4.8	4.5	4.9
	C-Agg	6.0	5.6	5.4	5.3	5.1	5.3	5.0	4.8
Attention Seeking	E-Agg	5.6	6.4	5.8	6.2	5.8	5.4	5.1	5.6
	E-Norm	5.4	5.4	5.2	5.4	4.6	5.2	5.0	5.2
	C-Agg	6.6	6.4	6.1	6.0	6.1	6.4	5.7	6.0

Table 27

Summary of F values from one-way ANOVAS on weekly teacher ratings for treated and control children classified according to pre-test d-score

Variable	Weeks 1	2	3	4	5	6	7	8
Activity Level	1.17	1.31	2.65	1.95	1.37	.15	1.22	3.18 *
Nature of Activity	ns	ns	3.74**	ns	2.49	ns	ns	1.03
Attention Span	1.59	ns	ns	ns	ns	ns	ns	ns
Verbal Communications	ns	ns	2.45	1.30	1.71	ns	ns	1.1
Cooperation	4.55**	1.15	6.37**	1.43	4.45**	1.08	1.89	3.82**
Hostility	ns	ns	1.85	1.53	1.3	ns	1.07	2.82*
Frustration Tolerance	ns	ns	1.54	2.28	6.22**	1.85	3.95**	1.86
Dependency	ns	ns	4.20**	ns	ns	ns	1.53	ns
Work Attitude	2.0	1.87	3.97**	1.68	ns	ns	ns	ns
Goal Persistence	1.97	ns	1.86	ns	ns	ns	ns	ns
Attention Seeking	ns	1.06	ns	ns	3.42*	3.19*	1.21	1.10

N.B. Df = 2, 14

$*p < .10$

$**p < .05$

Table 28

Means, standard deviations and standardized discriminant function coefficients for Think Aloud and no treatment control

Variable Name	Experimental		Control		Standard Coefficient
	X̄	SD	X̄	SD	
On-task	6.39	1.54	6.0	.79	24.759
Physical Contact	.54	.46	.39	.24	19.586
No Deviant	4.67	1.50	3.86	.88	-10.339
Noise	.61	.50	.70	.38	- 8.442
Other Deviant	.06	.05	.35	.35	8.020
Participation	.94	.45	1.50	.62	- 7.033
Interrupt	.04	.07	.23	.23	- 6.503
Seat Turning	.51	.37	.67	.45	5.614
Daydreaming	.71	.47	1.41	1.21	4.587
Hostile	.12	.13	.03	.05	3.988
Fidgeting	2.28	1.30	2.14	.98	2.756
Out-of-seat	1.26	.59	1.19	.53	2.157
Attention-seeking	.12	.10	.54	.49	- 1.712
Vocalizing	3.10	1.59	2.83	1.56	- 1.277
Arguing	.09	.22	.06	.11	.230
Centroid	6.913		-8.641		

Table 29

Intraclass correlation coefficients for behavior observation variables

	Sum Task	Phys Cont	No-Dev.	Noise	Other	Part	Inter-rupt	Seat Turn	Day-dream	Hos-tile	Fidg	Out Seat	Attn	Vocal
On-task	1.00													
Phys contact	-.64	1.00												
No Deviant	.74	-.48	1.00											
Noise	-.26	.47	-.57	1.00										
Other	-.12	-.18	.05	-.25	1.00									
Participation	-.11	.40	-.20	-.03	.38	1.00								
Interrupt	.10	-.08	.23	-.45	.47	.11	1.00							
Seat turning	-.41	-.05	-.15	-.01	.19	-.49	.17	1.00						
Daydreaming	-.57	-.00	-.41	.08	.27	-.23	-.01	.38	1.00					
Hostility	-.06	-.10	.06	-.36	.10	.26	-.01	-.27	-.06	1.00				
Fidgetting	-.71	.44	-.73	.37	-.27	-.03	-.41	.11	.34	-.10	1.00			
Out-of-seat	.13	-.24	-.09	-.24	.49	.36	.48	-.19	-.23	.18	-.23	1.00		
Attention-seek	-.02	.22	-.14	-.07	.16	.62	.07	-.17	-.31	.27	.00	.11	1.00	
Vocalizing	-.18	.62	-.29	.47	-.28	.12	.03	.10	-.31	-.30	-.02	-.01	.24	1.00
Arguing	-.37	.11	-.24	-.13	-.13	.01	-.23	.02	-.13	.47	.46	.09	.14	-.19

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Table 30

Mean frequency of classroom behaviors during observations

Group	Behavior Category				
	On-task	No deviant	Sum deviant	On-task minus No-deviant	Sum deviant minus Vocalization
Aggressive-Experimental (n = 5)	6.2	5.0	9.4	1.3	6.1
Normal-Experimental (n = 5)	6.5	4.4	9.9	2.2	7.0
Aggressive-Control (n = 7)	6.0	3.7	10.7	2.29	7.7

Table 31

PIPS Test: Group means and comparisons

Variables	Groups				
	Experimental		Control		F value
Part I	$\bar{X}$	SD	$\bar{X}$	SD	(1, 16)
Prosocial Solutions	3.70	.675	4.00	1.07	.529
Aggressive Solutions	1.40	.699	.625	.916	4.157 **
Irrelevant Responses	2.30	2.16	4.00	1.85	3.109 *
Total Solutions	5.10	.316	4.63	1.19	1.489
Part II					
Prosocial Solutions	3.30	.675	3.25	.463	.032
Irrelevant Responses	1.60	1.58	1.13	.991	.548
Totals					
Total Solutions					
Parts I and II	8.40	.843	7.88	1.36	1.017
Total number of					
different categories	8.00	1.15	7.00	1.69	2.222
Total Talk					
(Irrelevant Talk)	4.10	3.14	5.13	1.89	.652
Percent Solutions	.705	.135	.611	.108	2.539

$*p < .10$

$**p < .05$

Table 32
PIPS Test scores on groups defined by pretest d-score classification

	Problem 1			Problem 2						
	Non Agg Sol	Agg Sol	Irrel	All Sol	Sols	Irrel	Total Sols	Total Cat.	Total Irrel Talk	Percent Sols.
A-Exp	3.60	1.60	3.20	5.20	3.40	2.00	8.60	8.20	5.60	.636
_n_ = 5	.490	.490	2.40	.400	.800	1.79	1.02	1.33	3.38	.119
N-Exp	3.80	1.20	1.40	5.00	3.20	1.20	8.20	7.80	2.60	.774
_n_ = 5	.748	.748	1.02	0.0	.400	.980	.400	.748	1.36	.097
A-Control	3.86	.714	3.57	4.57	3.14	1.14	7.71	7.00	4.71	.623
_n_ = 7	.990	.881	1.40	1.18	.350	.990	1.28	1.69	1.48	.103
A-Exp vs N-Exp _df_ = 1, 9	ns	ns	1.08	ns	ns	ns	ns	ns	1.85	1.91*
A-Exp vs A-Con _df_ = 1, 12	ns	2.06 *	ns	ns	ns	1.02	ns	1.37	ns	ns

*$p < .05$

Table 33

Cognitive Test Scores on Pre-Testing for Children In Think Aloud and Great Expectations Including Sub-Groups Derived from D-Score Classification Based on These Tests

Variable	Group											
	Think Aloud						Great Expectations					
	Agg		Norm		Total		Agg		Norm		Total	
	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
n	21		11		32		22		10		32	
Age (months)	86.9	9.4	74.9	8.6	80.9	9.1	87.5	5.9	83.3	6.4	85.4	6.05
Grade	1.5	.5	1.5	.5	1.5	.5	1.5	.5	1.4	.5	1.5	.5
WISC												
Digit	7.9	2.9	9.7	2.4	8.5	2.8	6.8	3.0	10.2	1.9	7.9	3.1
Vocabulary	10.4	2.9	9.2	2.0	10.0	2.6	9.9	2.1	10.1	2.5	10.0	2.2
Block Design	9.2	2.7	9.0	2.6	9.1	2.7	9.1	2.7	10.9	3.1	9.7	2.9
Object Assembly	10.8	1.8	10.9	2.2	10.8	1.9	10.6	2.0	11.1	2.2	10.8	2.0
Mazes	9.9	2.7	11.9	2.7	10.6	2.7	9.9	2.6	12.0	1.1	10.6	2.4
PIQ	99.3	13.0	103.9	11.4	100.9	12.5	98.9	12.9	108.3	9.3	101.8	12.5
ITPA Auditory Reception	35.0	5.9	36.2	5.6	35.4	5.7	33.9	6.6	38.0	5.7	35.2	6.5
WRAT Reading	1.9	.8	1.9	.9	1.9	.8	1.8	.9	1.7	.8	1.8	.8
MFF												
AVRT	9.9	4.4	11.6	6.3	10.5	5.1	9.5	4.5	9.7	3.8	9.6	4.2

Table 33 (continued)

Variable	Group											
	Think Aloud						Great Expectations					
	Agg		Norm		Total		Agg		Norm		Total	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
MFF												
Errors	17.5	5.4	12.7	6.9	15.8	6.3	17.1	5.6	12.8	3.6	15.7	5.4
Inner	1.5	1.4	.8	1.4	1.3	1.4	1.0	1.8	1.6	1.6	1.2	1.8
Other	9.1	6.7	1.2	1.5	6.4	6.7	4.7	5.4	2.6	2.0	4.0	4.7
Relevant	6.0	4.0	.8	1.3	4.3	4.2	3.5	3.7	3.0	2.3	3.4	3.3
Irrelevant	1.2	1.3	.5	1.0	1.0	1.2	.9	.9	.6	.8	.8	.9
Insecure	1.1	1.7	.5	1.1	.9	1.5	.2	.5	.6	.7	.3	.6
Simon Says												
A-Errors	2.6	1.7	2.6	1.4	2.6	1.6	3.4	1.6	2.3	1.6	3.1	1.6
B-Errors	1.9	1.7	2.0	1.5	1.9	1.6	2.4	1.7	1.4	1.6	2.1	1.7
Finger-Tapping (overt)												
Baseline	41.1	11.5	34.6	10.9	38.9	11.6	41.1	12.7	40.2	8.9	40.8	11.6
"Batter" goads	24.2	5.2	22.7	7.3	23.7	5.9	24.5	5.5	24.4	4.9	24.5	5.2
"Batter" taps	33.0	10.5	31.5	9.6	32.5	10.1	29.9	9.9	32.5	7.9	30.7	9.3
"Faster" goads	21.4	3.6	20.4	4.6	21.1	3.9	20.9	3.5	20.7	2.9	20.8	3.3
"Faster" taps	40.8	12.7	38.1	13.5	39.9	12.9	41.0	16.1	40.4	10.9	40.8	14.5

Table 33 (continued)

Variable	Group											
	Think Aloud						Great Expectations					
	Agg		Norm		Total		Agg		Norm		Total	
	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
MFF												
"Slower" goads	17.2	4.7	16.4	3.6	16.9	4.3	18.0	4.5	18.1	4.2	18.0	4.3
"Slower" taps	22.6	8.0	24.0	9.0	23.1	8.3	22.5	5.9	26.4	9.2	23.7	7.2
Finger-Tapping (covert)												
"Batter"-goads	24.8	7.4	22.4	7.7	24.0	7.5	24.4	5.0	24.8	5.0	24.5	4.9
"Batter" taps	31.1	10.5	30.2	12.2	30.8	10.9	25.6	8.0	29.9	8.5	29.7	8.0
"Faster" goads	22.0	4.9	19.6	4.3	21.2	4.8	21.0	3.3	19.8	4.1	20.7	3.5
"Faster" taps	38.2	11.2	33.8	14.1	36.7	12.2	37.8	12.1	35.8	9.1	37.2	11.2
"Slower" goads	18.8	4.8	16.6	5.1	18.0	5.0	19.0	4.4	18.8	4.6	18.9	4.4
"Slower" taps	25.4	6.9	25.5	11.3	25.4	8.5	23.0	4.6	25.0	7.6	23.6	5.6
WISC-Private Speech												
Immature	21.8	20.6	3.5	4.1	15.3	18.8	15.3	15.1	6.0	7.0	12.6	13.8
Mature	54.8	45.3	24.9	36.5	44.2	44.2	37.4	40.0	24.6	24.0	33.6	36.2
Social	13.7	12.2	6.1	7.1	11.0	11.1	13.2	15.1	7.6	10.5	11.6	14.0

Table 34

Post-Test Cognitive Scores for Children in Think Aloud and Great Expectations Including Sub-Groups Derived from Pre-Test D-Score Classification

Variable	Group											
	Think Aloud						Great Expectations					
	Agg		Norm		Total		Agg		Norm		Total	
	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
n	21		10		31		22		10		32	
WISC-R												
Digit Span	8.8	1.6	9.0	2.4	8.8	1.9	7.8	2.6	9.7	.9	8.4	2.4
Vocabulary	10.2	2.1	8.9	1.0	9.8	1.9	9.4	2.6	9.8	1.8	9.5	2.4
Block Design	10.0	2.6	12.5	2.4	10.8	2.8	10.1	2.2	11.2	2.7	10.5	2.3
Object Assembly	11.7	1.9	12.6	2.1	12.0	2.0	11.0	2.1	12.7	2.1	11.5	2.2
Mazes	11.5	2.7	13.6	2.9	12.2	2.9	10.3	1.7	13.1	2.5	11.2	2.3
PIQ	106.5	13.0	120.4	11.0	111.0	13.9	103.0	9.5	115.9	11.9	107.0	11.8
ITPA Auditory Reception	38.0	6.9	37.9	4.1	38.0	6.1	33.4	5.1	35.8	6.8	34.1	5.7
WRAT Reading	2.1	.9	2.4	.9	2.2	.9	2.0	1.0	2.0	.9	2.0	1.0
MFF												
AVRT	11.7	4.9	12.5	5.0	12.0	4.9	9.1	4.3	8.8	2.9	9.0	3.9
Errors	16.1	6.5	14.5	5.4	15.5	6.1	15.5	5.9	13.8	6.5	15.0	6.0
Inner	3.6	4.5	.5	1.0	2.6	3.9	1.6	2.3	1.6	2.6	1.6	2.3
Other	8.9	7.2	3.7	6.5	7.2	7.3	4.2	4.7	4.3	6.2	4.3	5.1

Table 34 (continued)

Variable	Group											
	Think Aloud						Great Expectations					
	Agg		Norm		Total		Agg		Norm		Total	
	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
MFF												
Relevant	6.3	3.9	2.1	3.8	4.9	4.3	3.2	3.3	3.0	3.9	3.1	3.4
Irrelevant	2.1	1.7	.9	1.9	1.7	1.9	1.0	1.4	.8	.8	.9	1.2
Insecure	1.0	1.3	.0	.	.7	1.2	.5	.9	.7	1.2	.6	1.0
Simon Says												
A-Errors	1.3	1.2	1.3	1.5	1.3	1.3	2.0	1.6	1.4	.13	1.8	1.5
B-Errors	1.1	1.2	.6	.7	.9	1.1	1.6	1.5	1.4	1.2	1.5	1.4
Finger-Tapping (overt)												
Baseline	52.0	15.7	36.3	13.2	46.9	16.5	47.1	11.9	43.5	8.2	46.0	10.9
"Batter" goads	28.1	5.5	24.6	6.2	27.0	5.9	27.0	5.0	26.3	4.0	26.8	4.6
"Batter" taps	41.9	16.7	28.8	9.9	37.7	15.9	35.9	9.1	33.6	6.0	35.2	8.3
"Faster" goads	23.5	3.9	20.7	4.9	22.6	4.4	22.5	4.2	20.7	3.1	21.9	3.9
"Faster" taps	47.4	13.3	41.1	15.6	45.4	14.1	45.0	13.3	40.8	10.4	43.7	12.5
"Slower" goads	17.1	3.5	17.4	3.6	17.2	3.5	17.9	3.4	16.6	2.5	17.5	3.2
"Slower" taps	23.9	9.7	20.4	4.4	22.7	8.4	24.5	11.3	21.9	7.7	23.7	10.3

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Table 34 (continued)

Variable	Group											
	Think Aloud						Great Expectations					
	Agg		Norm		Total		Agg		Norm		Total	
	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
Finger-Tapping (covert)												
"Batter" goads	26.8	5.3	23.5	4.8	25.7	5.3	25.1	4.4	24.9	4.0	25.1	4.2
"Batter" taps	35.4	17.5	26.8	8.0	32.6	15.5	31.6	10.2	29.9	5.1	31.1	8.9
"Faster" goads	23.3	5.0	20.4	4.2	22.4	4.9	21.8	5.0	20.5	3.7	21.4	4.6
"Faster" taps	47.5	18.1	34.4	12.4	43.3	17.4	42.7	14.0	36.2	8.3	40.7	12.7
"Slower" goads	18.3	5.5	18.3	4.4	18.3	5.1	18.4	3.9	16.6	4.6	17.8	4.1
"Slower" taps	26.0	11.9	22.8	4.7	24.9	10.2	25.4	10.2	21.6	8.5	24.2	9.7
WISC-R Private Speech												
Immature	16.5	12.2	11.3	21.3	14.8	15.5	11.2	13.4	20.3	22.8	14.0	17.1
Mature	39.0	28.5	20.1	31.3	32.9	30.3	33.4	29.8	33.3	31.8	33.3	29.9
Social	10.0	11.2	6.4	8.5	8.9	10.4	12.5	12.7	13.3	8.5	12.7	11.4

Table 35

Standardized discriminant coefficients for arriving at d-score classifications of children in Think Aloud and Great Expectations

Variable	
MFF-Inner Speech	.728
Finger Tapping-Slow Overt Taps	.542
Vocabulary	-.494
MFF-Irrelevant Speech	-.497
AVRT	.475
Digit Span	.448
MFF-Relevant Speech	-.385
Finger Tapping-Baseline	-.347
Immature Private Speech	-.343
Mazes	.327
SS Errors	.316
WRAT	.300
Age	-.273
Auditory Reception	.257
Finger Tapping-Covert Goads	.255
Social-Private Speech	.210
Finger Tapping-Overt Goads	-.160
MFF Errors	-.113
Aggressive Centroid	-.769
Normal Centroid	.833

Table 36

PIPS Test Results for Think Aloud and Great Expectations Groups

	TA			GE			F
	TA-A	TA-N	Total	GE-A	GE-N	Total	Total
Child problem							
nonaggressive solutions	3.76	3.80	3.65	3.68	3.80	3.72	ns
Aggressive solutions	1.38	1.40	1.38	.55	.80	.63	9.71***
Repetitious and irrelevant talk	4.53	1.20*	3.4	5.23	4.50	5.00	5.33*
Mother Problem							
All solutions	3.19	3.00	3.12	3.14	3.10	3.13	ns
Irrelevant	.90	1.30	1.06	1.43	1.60	1.47	ns
Total							
Solutions	8.24*	8.20	8.15	7.36	7.70	7.47	ns
Categories	7.24*	7.30	7.23	6.41	7.10	6.63	ns
Repetitious and irrelevant talk	5.57	3.10*	4.73	6.95	6.0	6.67	7.96**
Solutions percent	62%	74%	66%	52%	58%	55%	12.82***

$^{*}p < .05$

$^{**}p < .01$

$^{***}p \leq .005$

N.B. Significant differences between TA-A and GE-A or TA-N and GE-N are indicated within the body of the table

Table 37

Means and standard deviations on SBCL _T_ scores for Low Need Achievement and Aggression and on numbers of items "improved" or "worse"

Variable	Think Aloud						Great Expectations					
	Agg		Norm		Total		Agg		Norm		Total	
	$\bar{X}$	_SD_	$\bar{X}$	_SD_	$\bar{X}$	_SD_	$\bar{X}$	_SD_	$\bar{X}$	_SD_	$\bar{X}$	_SD_
_n_	21		11		32		22		10		32	
SES	65.2	12.4	63.4	11.6	64.5	11.9	58.7	12.5	70.6	16.2	62.7	14.6
Pre-SBCL												
Aggressive[a]	75.6	6.1	74.9	8.6	75.3	6.9	76.3	8.8	76.7	5.9	76.4	7.9
Belligerence[b]	9.7	3.0	8.9	3.0	9.4	3.0	9.6	3.1	9.7	2.3	9.6	2.8
Attention-seek[b]	6.2	1.7	6.0	1.5	6.1	1.6	5.9	2.1	5.7	2.3	5.8	2.1
Irritability[b]	6.3	2.5	6.8	3.5	6.5	2.8	7.2	3.3	7.7	3.7	7.4	3.3
Post-SBCL												
_n_	21		10		31		22		10		32	
Aggressive[a]	73.4	11.9	74.2	11.1	73.6	11.5	73.6	9.6	72.4	11.9	73.2	10.2
Belligerence[b]	8.9	3.8	9.0	3.9	8.9	3.7	9.3	3.5	8.6	4.4	9.1	3.7
Attention-seek[b]	5.4	2.7	6.0	1.6	5.6	2.4	5.1	2.4	4.8	1.9	5.0	2.2
Irritability[b]	7.1	4.1	7.2	3.1	7.2	3.8	6.9	2.9	7.3	4.2	7.0	3.3

Table 37 (continued)

Variable	Think Aloud						Great Expectations					
	Agg		Norm		Total		Agg		Norm		Total	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Improved	9.3	7.0	6.5	5.8	8.4	6.6	14.2	10.9	12.1	9.0	13.5	10.2
Worse	3.6	8.2	5.2	9.4	4.1	8.4	1.4	4.7	.6	1.9	1.1	4.0
Low Need Achievement[a]	58.4	7.6	56.8	10.6	57.9	8.5	55.6	9.0	54.1	9.6	55.1	9.1
Improved[b]	9.6	6.5	7.6	5.7	9.0	6.2	10.7	9.6	7.9	6.0	9.8	8.6
Worse[b]	1.5	3.1	2.1	3.6	1.7	3.2	.9	3.4	.3	.7	.7	2.9

[a]*T*=scores

[b]number of items

Table 38

Weekly teacher ratings for boys in Think Aloud and Great Expectations Programs

Variable	Weeks								
	Pre 1 & 2 (X)	1	2	3	4	5	6	7	8
Activity Level									
TA	6.1	5.5	5.4	5.4	5.3	5.4	5.4	5.6	5.2
GE	6.1	5.6	5.8	5.5	5.3	5.5	5.2	5.1	5.1
Nature of Activity									
TA	6.0	5.7	5.5	5.6	5.5	5.5	5.5	5.6	5.4
GE	5.9	5.5	5.8	5.7	5.4	5.5	5.4	5.3	5.1
Attention Span									
TA	6.1	5.5	5.3	5.4	5.5	5.4	5.2	5.4	5.3
GE	5.6	5.3	5.4	5.5	5.3	5.3	5.5	5.2	5.3
Verbal Communication									
TA	5.3	4.6	5.1	5.1	5.1	5.1	5.0	5.2	5.1
GE	5.1	5.4	5.4	5.2	5.1	5.2	5.1	5.0	5.1
Cooperation									
TA	5.2	4.8	4.9	5.1	5.1	4.9	4.9	5.2	4.9
GE	4.9	4.9	5.0	4.9	4.8	5.0	4.9	4.7	4.9
Hostility									
TA	5.2	5.0	5.0	5.0	5.1	5.2	5.1	5.3	5.1
GE	5.2	4.8	5.0	5.1	4.9	5.1	4.9	4.6	4.8
Frustration Tolerance									
TA	5.6	5.3	5.3	5.1	5.2	5.1	5.0	5.4	5.1
GE	5.1	5.2	5.3	5.1	5.2	5.2	4.9	4.8	4.9

Table 38

(Continued)

Variable	Weeks								
	Pre 1 & 2 (X)	1	2	3	4	5	6	7	8
Dependency									
TA	5.5	5.0	5.3	5.3	5.1	5.0	5.0	5.1	5.1
GE	5.3	4.9	4.9	5.0	4.6	4.7	4.9	4.7	4.7
Work Attitude									
TA	5.7	5.3	5.3	5.3	5.4	5.1	5.2	5.3	4.9
GE	5.2	5.2	5.5	5.6	5.1	5.2	5.5	5.1	4.9
Goal Persistence									
TA	5.4	5.2	5.2	5.1	5.1	5.0	5.1	5.2	5.1
GE	5.4	5.2	5.4	5.5	5.0	5.2	5.4	5.1	4.9
Attention Seeking									
TA	5.8	5.2	5.3	5.1	5.0	5.0	5.1	5.5	5.0
GE	5.4	5.3	5.6	5.1	4.9	5.3	5.2	4.7	4.8

Table 39

Behavior Observations

Variable	Think Aloud						Great Expectations						d	Univariate
	Agg		Norm		Total		Agg		Norm		Total			
	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD		F (1, 61)
n	21		10		31		22		10		32			
On-task	6.6	1.8	6.2	1.6	6.45	1.7	6.7	1.4	7.1	1.9	6.84	1.6	1.27	ns
Contact	.2	.3	.3	.3	.25	.28	.4	.6	.2	.2	.36	.40	-1.19	1.27
No deviant	6.4	1.6	5.8	1.5	6.21	1.58	6.4	1.6	7.2	1.7	6.67	1.65	-.73	1.20
Hostile	.2	.5	.1	.2	.15	.42	.3	.4	.1	.2	.18	.32	-.64	ns
Other	.4	.4	.3	.3	.38	.38	.4	.4	.2	.2	.36	.33	.63	ns
Out-of-seat	1.8	1.8	1.5	1.5	1.68	1.7	1.3	1.7	1.2	1.1	1.30	1.55	.62	ns
Vocalizing	1.8	2.0	2.7	1.8	2.07	1.9	1.9	2.0	1.3	.7	1.67	1.7	.60	ns
Noise	.8	1.0	.6	.5	.73	.86	.5	.6	.4	.6	.46	.61	.51	2.07
Participating	1.1	.8	1.0	.4	1.0	.71	1.3	1.0	1.5	1.2	1.38	1.04	-.41	2.18
Fidgeting	.8	.6	1.2	.6	.91	.65	.6	.5	.8	.9	.69	.63	.35	1.83
Attention-seeking	.2	.2	.1	.1	.19	.20	.3	.5	.1	.1	.25	.44	-.14	ns
Daydreaming	.8	.5	1.0	.5	.88	.48	1.0	.6	.7	.6	.90	.64	-.11	ns
Sum Deviant	7.3	5.0	8.0	4.0	7.65	4.71	7.1	5.4	5.3	3.3	6.2	4.87		
Centroid					.55						-.53			

Table 40

Intraclass correlation coefficients for behavior obs rvation variables on children in Think Aloud and Great Expectations programs

	Sum Task	Contact	No-Dev.	Hostile	Other	Out-of Seat	Vocal	Noise	Partici-pation	Fidget	Attention	Daydream
Sum Task	1.00											
Contact	-.41	1.00										
No-Deviant	.90	-.55	1.00									
Hostile	-.49	.57	-.57	1.00								
Other	-.61	.54	-.64	.74	1.00							
Out-of-Seat	-.57	.65	-.52	.45	.51	1.00						
Vocalization	-.63	.60	-.73	.61	.61	.47	1.00					
Noisemaking	-.33	.38	-.37	.17	.12	.37	.21	1.00				
Participation	.52	-.21	.51	-.31	-.19	-.30	-.28	-.27	1.00			
Fidgeting	-.70	.15	-.70	.31	.31	.27	.34	.14	-.36	1.00		
Attention	-.29	.38	-.36	.19	.30	.08	.22	.39	-.14	.04	1.00	
Daydreaming	-.53	.01	-.50	.05	.18	.02	.09	-.04	-.37	41	.05	1.00

Table 41

Comparison of Think Aloud and Great Expectation results with previous trials including untreated controls

		Pre-T		Post-T		Post SBCL			PIPS		
	n	LNA	Agg	LNA	Agg	LNA Imp	Agg Imp	Tot Sol	Talk	Sol %	Agg
Individual TA	12	59	71.0	58	69	10.3	9.7	8.8	5.5	66	2.12
Dyads-Staff	10			53.8	72.0	13.9	14.7	8.4	4.1	71	1.4
TA-Teachers	31		75.3	57.9	73.6	9.0	8.4	8.15	4.7	66	
GE-Aides	32		76.4	55.1	73.2	9.8	13.5	7.47	6.67	55	
Untreated Controls	18		75.0	57.5	72.1	6.5	9.4	7.54	6.37	56	

Appendix A

Measures of Private Speech

Bonnie W. Camp, Mary Ann Simmons Bash, Linda Oldham, G. E. Blom, & F. C. Hebert

From previous studies (Camp, Zimet, van Doorninck & Dahlem, 1977) we concluded that the optional shift procedures could not be relied upon to measure this important variable. We therefore turned to a review of the literature on private speech and self-control to determine whether more direct measures of verbal mediation activity could be developed for use in the present studies.

The work of Soviet psychologists Luria and Vygotski concerning the development of verbal control over behavior (see Meichenbaum, 1975, Berlyne, 1970 & Wozniak, for reviews of this literature) along with Piaget's theorizing have spurred most of the interest in this area. One direction this has taken is the study of spontaneous use of private speech or verbal mediation in naturalistic settings. This has been described by Jensen as follows:

> (Mediation) "refers to all mental processes that intervene between stimuli and responses when the relationship between these two sets of events cannot be attributed to simple associative processes. In most cases the intervening processes are conceived of as covert verbal responses to external stimulus situations; the verbalizations act in turn as stimuli for other responses." (1971).

In this country the work of Kohlberg, Yaeger & Hjertholm (1968) has served as a basis for developmental studies of private speech. By including all types of vocalization ranging from vocal noises, mutterings, singing, fantasies, talking to the examiner, problem-solving aloud in their observations, Kohlberg et al. (1968) described a developmental hierarchy in the type of private speech used by children at different ages. The lowest or most immature level consisted of prosocial self-stimulatory speech such as word play, singing, and animal noises. They described the next level as outer-directed private speech such as remarks to nonhuman objects and description of the child's own activity. The third level includes private speech which guides the child's behavior in the situation and the fourth level includes inaudible mutterings that represent inner speech. The final level involves silent inner speech or thought.

Dickie (1973) theorized that the higher levels of

private speech should become more prominent as children matured and should be related to evidence of ability to inhibit responding and decreasing impulsivity. She tested these hypotheses through observations of private speech in 2½ to 8-year-old children in several types of playroom settings along with performance on variations of the children's game, Simon Says. In brief, her most important findings were as follows:

1. Out-directed private speech decreased monotonically with age

2. Inaudible muttering increased with age

3. Inner-directed private speech remained the same over the age range

4. Increasing chronological and mental age corresponded to decreasing impulsivity and increasing self-control, persistence and maturity of private speech

5. The major difference between young, impulsive, less-controlled children and older, reflective more-controlled children is the immature child's continued use of lower levels of private speech and social speech in task situations

6. Growth over the age period correlated with inhibition of lower levels of private speech without change in higher levels of private speech.

Subsequently Meichenbaum (1975) has reported similar findings when comparing the private speech of impulsive and reflective preschoolers. As a result of their studies Meichenbaum hypothesized that impulsive children "do not habitually and spontaneously analyze their experience in verbal terms and do not formulate and internalize rules that might guide them in new learning situations".

This also corresponds with a view proposed by Jensen to explain the frequent finding of poorer performance on nonverbal than verbal intelligence tests in groups of children who might be expected to have deficiencies in verbal development. He suggests that these children are stimulated to use verbal problem-solving strategies only if the problem is posed verbally. They will consequently be more handicapped on tests which require verbal mediation but are ostensibly nonverbal because they will try to solve them perceptually.

From the foregoing, it is evident that there are many problems in determining whether verbal mediation strategies are being used in problem solving. Verbal tests may be of

limited use for making these observations because verbal questions stimulate verbal responses. On the other hand, Jensen's comments in particular suggested that nonverbal tests employed in common clinical practice might provide a basis for systematic observations of the types and functions of private speech which could be related to broader categories of behavior.

In approaching this problem we first wrestled with the question of whether we should develop a situation for eliciting private speech. This created problems alluded to by Jensen in estimating spontaneous use of private speech. If White (1965) is correct in supposing that the degree of reliance on cognitive processing of information is more important than presence or absence of verbal mediating ability and if Jensen is correct in suggesting that the critical problem is whether children use verbal mediation spontaneously in situations which do not ostensibly call for it, then creating a situation to elicit private speech might defeat the purpose. Dickie's work suggested that nonverbal tasks of increasing difficulty might be useable for this purpose. Our test battery already included several performance tests from the Wechsler Intelligence Scale for Children and since administration involves continuing with each child until he reaches items too difficult for him, these seemed to offer a pool of situations in which private speech could be observed without adding to an already lengthy test battery. Because Jensen had suggested such activity might be observed during administration of the Primary Mental Abilities Test, we decided to add this as well. Since we also planned to include Kagan's Matching Familiar Figures in the revised test battery and since private speech recorded during this procedure might provide insight into relationships between private speech and performance on the MFF, this was included as well.

The following guide was developed for recording and scoring private speech during all tests except the MFF.

PRIVATE SPEECH SCORING STANDARDS FOR

WISC (B.D., O.A, & MAZES) ITPA (VSM) &

PMA(SPATIAL RELATIONS)

1. <u>Word Play</u>: singing, humming, whistling, mouth noises (e.g. clicking, or car type noises), nonsense words, and words or phrases repeated for their own sake.

   examples: doo-bee-doo
   a car, car, car, car
   round and around and around and ...

2. Outer Directed: (1) Remarks addressed to non human objects or nonpresent other.

examples: Get in there! (referring to puzzle piece) you dumb block.
I hope I beat the stopwatch (not directed to E)

(2) Comments about task that are not self-guiding:

examples: It's a funny looking car.
This piece looks like a airplane
This one's hard (easy).
*It's a cowboy's horse.

3. Inner Directed: (1) Self-guiding remarks.

examples: I'm not sure.
I'll try it this way.
The red one goes first.
Oops, not that way.
He's trapped.
The star goes here and the circle goes here.
*It's a car.

(2) Preparatory remarks (child readies himself for task).

Examples: OK, now.
Let's see.
Well, where do I start?

(3) Self-encouraging comments:

examples: Keep trying.
I've almost got it.
Have to start over but I'm getting it.

4. Muttering: Inaudible words or statements, spoken too softly to be heard by examiner.

5. Tension Release: Emotional expressions related to success, failure or frustration.

Examples: Whew!
I did it!
I just can't!

6. Social: Clearly directed toward examiner, eye contact usually made and/or obvious pause for response from examiner.

Examples: Is this the right way, Mrs. B?
You can't help me, can you?
I hope I don't miss gym class.

*Note: Naming of objects was scored Inner Directed if it came before child began to assemble puzzle because it was then considered self-guiding. Otherwise such naming was scored Outer Directed.

Test: B.D. O.A. Mazes

Private Speech

Name____________________

Unclassified	Word Play	Outer	Inner	Mutter	Tension Release	Social
	doo-de-doo Singing	This piece looks like a plane. What a funny horse.	I think it goes like this. Can't go this way.	✓	I got it! Whew! I can't do it.	Directed to E

The following guide was developed for recording and scoring private speech on the MFF.

PRIVATE SPEECH SCORING STANDARDS

For MFF

1. Inner Directed: Anything that appears self-guiding.

   Examples: I can tell by the eyes
   The other arm is sticking out
   They all look the same
   This is curled.
   Let me see.
   Too big.
   It's the stripped one

2. Other: All other verbalizations: social, word play, outer directed comments, laughing, singing, statements of choice.

   Examples: It's this one.
   The cat's eyes are mad.
   These are hard.
   Do you have some more games for me?

MFF - SCORING SPEECH FOR RELEVANCE

Scoring Conventions:

Score each card for Relevant, Irrelevant only once. Each card may have a total of three scores but only one of each type. Insecure scored as number of statements on each card.

Relevant: Anything directly relevant to task:

"Let's see"
"This one"
"This is hard"
"They all look the same"
"I figured it out from the pickets"
"I should have known it was this"

Irrelevant: Everything Else.

"Um"
"Um hum"
Laughing, singing
"Is that a rooster or a giraffe?"
"This is funny-looking"
"My stomach hurts"
"A cowboy!"
"What time will we be done?"
"Do I get a prize like Raymond?"

Insecure: Anything that indicates child is unsure of
(1) his performance
(2) whether the examiner likes him
(3) whether he likes himself

Examples:

(1) "It's hard"
"This is too hard"
"They all look alike"
"How are they different?"

(2) Manifestations of acute indecision

"It's this--no wait--it's, no, it's this"

(3) Asking rather than telling

"Is this it?"

(4) Excuses

"I didn't see the legs."

(5) Blatant distractions

"My stomach hurts" after a series of wrong answers
"Can we stop now?"

Appendix B

Instructions for the Classroom Observation Form

Sara G. Zimet, Bonnie W. Camp and Karl White

Each child in the study will be rated according to the procedures outlined below. Ratings will take place in 5-minute segments (ten 30-second intervals) with a maximum of 15 minutes per child per day. A total of 1 hour observation time for each child is needed.

Each of the schools and teachers involved in the study has been informed of your task and should be expecting you. Try to be as cooperative and congenial with the school personnel as possible as it is by their good-will that we are allowed to conduct research in the public schools.

Each time you rate, you will need:

1) a clipboard
2) two sharpened pencils
3) a watch with a sweep-second hand
4) a supply of Classroom Observation Forms
5) the names and schedules of the children you are to observe

An example of the classroom observation sheet is shown on the following page. You will be primarily concerned with filling out the information requested in the heading and in columns I, II, and III as explained below.

<u>Heading</u>

Child: Fill in the name of the child. You should not know whether the child was in the special treatment group. If the teacher offers to tell you, remind him or her

CLASSROOM OBSERVATION FORM

Child: ______________________ Teacher: ______________________

Observer: ______________________ Date ______________________

Setting: ____

Observe 20 seconds--Record 10 seconds

Time Interval	I On- or Off-Task Behavior	II Specific Off-Task Behavior	III Unexpected People or Environmental Happenings In or Out of Classroom
1) 30 seconds			
2) 30 seconds			
3) 30 seconds			
4) 30 seconds			
5) 30 seconds			
6) 30 seconds			
7) 30 seconds			
8) 30 seconds			
9) 30 seconds			
10) 30 seconds			

CODE

On- or Off-Task Behavior

+ = attends to assigned material or teacher or instructions by teacher on materials for at least 15 seconds.

0 = attends to unassigned material for more than 5 seconds.

(P)= active participation or cooperation in classroom instructional activity (reacting, volunteering, asking questions, helping).

Specific Off-Task Behavior

X = out of seat

→ = physical contact or disturbing others directly

n = audible noise (non-vocal)

↰ = 90° turn seated

v = vocalization

@ = attention getting behavior
D = daydreaming
f = pronounced fidgeting to the degree that it interferes with paying attention
Ø = other off-task behavior
(H)= hostile, angry, resentful, negativistic, or defiant behavior
/ = no off-task behavior

in a nice way that it would be better for the validity of the study if you did not know.

Teacher: Fill in the name of the teacher. Ratings may also be done when a substitute teacher is present. When this is the case, write the name of the substitute teacher followed by (ST).

Observer: Your name.

Date: The date on the day of the observation.

Setting: Indicate in which of the following instructional settings the child is participating during that particular observation segment.

a) total class instruction in reading
b) small group instruction in reading
c) seat work in reading
d) total class instruction in math
e) small group instruction in math
f) seat work in math
g) other (specify)

Columns I and II

Columns I and II provide an objective description of the child's behavior during the observation period; Column III is for any necessary explanatory notes. Column I is a general rating of the child's activity for ten 30-second segments; Column II is a more detailed description of the same ten segments (each of the 30-second segments is comprised of 20 seconds of observation time and 10 seconds of recording time). In other words, you will put symbols, representing different types of behavior, in both Columns I and II for every 30-second

segment. These symbols will be more fully explained later. The schema in Figure 1 describes the general outline of how this is done.

Before doing any observations, you should determine what specific rules exist in that particular classroom, e.g., do kids need to raise their hand before asking a question, is it permissible to get out of your seat without permission, etc. During each 30-second segment, you will spend 20 seconds observing and 10 seconds recording. It is essential that you do not observe for more than 20 seconds during this time. If you finish recording before the allotted 10 seconds of reading time, continue looking at your watch or look someplace else in the room. Do not begin watching the assigned child again until it is time to begin another 30-second segment. Also, try to avoid catching the eye of the child you are watching. If he or she does stare directly at you, try to glance somewhere else, watch out of the corner of your eye, etc. It may even be necessary to drop one or two 30-second segments and add them on the end until the child's attention is not focused directly on you.

Column 1. During the 20 seconds of observation time, for each segment you will rate the child either ON TASK, +, or OFF TASK, 0. These are mutually exclusive - they cannot occur at once. If the child is on-task for more than 15

Figure I

Schema showing how to use classroom observation form

OBSERVE
assigned child for
20 SECONDS

was child ON TASK
for 15 or more seconds?

YES NO

RECORD + in column I | RECORD 0 in column I

RECORD (P) in column I — Yes — did child ACTIVELY PARTICIPATE during this time segment

NO

RECORD specific behavior
in column II

x ? n [illegible] v @ D f Ø /

RECORD (H) in column I — Yes — were any of the specific behaviors HOSTILE or DEFIANT

NO

RECORD EXPLANATORY NOTES IN Column III — Yes — are any EXPLANATORY NOTES needed in column III?

NO

OBSERVE assigned child for
next 20 second interval

RECORD observation as
shown above for 10 seconds

continue this sequence until
you have 10 observation time
segments for that child - then
move on to the next assigned
child.

seconds, he receives a +. If the child is off-task for more than 5 seconds, he receives a 0. In the very few instances where it is very close and you cannot decide, give a +0. For purposes of this rating, whether or not a child is "on-task" is determined by whether or not he is doing the kinds of things the teacher would logically expect him to do in that situation. Three examples will make this clear.

a) If a girl is sitting at her seat cutting and pasting, finishes her task and gets out of her seat to put away the scissors and throw away her scraps of paper, she would not be rated off-task since she is expected to clean up her mess when she is done.

b) The teacher tells a little boy to complete a task at his seat and raise his hand when he is finished. When he finishes, he raises his hand and sits quietly with his hand raised for some time before the teacher can get around to him to check his work. Even though he isn't actively doing any work during this time, he would not be rated off-task since this was exactly what the teacher expected of him.

c) A little girl is participating in small group reading work. The teacher asks the pupils to repeat certain words after her. Instead of doing that, the little girl takes out her book and reads it. Even though she was actively participating on a reading related activity, it was not the activity in which she was expected to be participating. Consequently, she should be rated off-task for this time segment.

In addition to these ratings (+, 0, or +0), a child may receive a (P). (P) can never occur by itself - it must always accompany one of the other three ratings. A child receives a (P) if he or she "actively participates" during the 20-second observation period. "Actively participating" consists of

things like answering a question, asking a question (using proper classroom procedures), volunteering to help, etc. If a child were to raise his hand twice and ask two separate questions during the same 20-second observation period, he would receive 2 (P)'s. If, however, he raised his hand to answer a question or to signal that he had completed a task and he had his hand in the air for parts of 2 observation segments, he would only receive a single (P) for one of the segments. (P) is only given for positive actions.

<u>Column II</u>. Eleven separate marks can occur in Column II. Ten of these can legitimately occur by themselves, the other, "(H)", may only occur in conjunction with one of the others. The individual marks will be explained below and general guidelines will follow:

1) X = out of seat: Any time that the child gets out of his seat when it was not necessary to the task in which the child was expected to be involved. This includes wandering around the room without instruction from the teacher and leaving the seat without permission unless regularly permitted to do so. Where the child is performing a permitted out-of-seat activity, such as sharpening his pencil, this would not be rated except when (a) unpermitted behavior occurs during the permitted act such as "side trips", looking at things on the teacher's desk, stopping to talk, etc., or (b) the

permitted activity is prolonged beyond a reasonable period of time. If the child is out of his seat for a prolonged period of time, he should receive an X for approximately each 5 seconds of time he is out. For instance, if a child were wandering around the room for the entire 20 seconds, he would receive 4 separate X's.

2) ⟶ = physical contact or disturbing others directly: any physical contact initiated or reciprocated between the child under observation and another person in the classroom. This should be counted regardless of the intent of the child (i.e., aggression or affection). Include here physical contact made with another person directly with the body (fighting, poking, tickling, etc.) as well as by means of an object such as a book held in a hand, or an object thrown. Disturbing the belongings of another child should also be rated. This includes grabbing objects or work, knocking objects off the other's desk, destroying his property, pushing his desk, etc. Also count instances where physical contact was intended but not actually accomplished - for instance, a child may throw something and miss or swing at someone and miss.

3) n = audible noise (non-vocal): any non-talking noise which is <u>clearly</u> audible and which is <u>not</u> a necessary

part of a task related activity. This includes whistling, humming, tapping a pencil, clapping, tapping feet, rattling or tearing papers, throwing a book on a desk, slamming a desk closed, etc. If a child is making audible non-vocal noises for an extended period of time, he should receive an n for approximately every 5 continuous seconds. In other words, if he is making noise the entire 20 seconds, he should receive 4 n's.

4) , = 90° turn in seat: the child must be seated and the turn of the body must be more than 89°. The desk is used as a reference point. This behavior is coded when the child turns to look at what is going on in another part of the room rather than attending to the assigned task. It is not coded when the child wishes to attract the teacher's attention and does so by turning and raising his hand.

5) v = vocalization: this includes any vocalization which is not a necessary part of the task in which the child is participating. Examples are answering the teacher without first raising his hand when such behavior is against the rules, talking to others without permission, muttering which is obviously intended for an audience, swearing, singing, etc. Stating refusal to work and putting off obeying instructions in response to a teacher's question is rated. Working out loud is not rated

as long as it is permitted and is not disturbing to those around him. Normal coughs, sneezes, etc. are not rated. If a child vocalizes for an extended period of time, he should receive a v for approximately 5 seconds of vocalization. In other words, if he vocalized the entire 20-second time, he would receive 4 v's.

6) @ = attention getting behavior: any behavior which is obviously meant to attract attention in an unacceptable way (i.e., raising the hand in an acceptable way would not be counted). This would include things like waving arms, shaking shoulders, raising and lowering desk top repeatedly, etc. Any behavior where the child is obviously saying in a nonverbal way, "Hey, someone notice me."

7) D = daydreaming: whenever the child is staring absently off into space in some other direction than he ought to be. For instance, this rating should not be given if the child is looking somewhat blankly in the direction of the teacher who is giving instructions, or is staring somewhat blankly at his work in front of him. In order to be rated here, a child must obviously be attending someplace else besides where he ought to be. Include it when the child is watching someone else do something instead of attending to the task he should.

8) f = fidgeting: any pronounced fidgeting to the degree that it obviously interferes with attending to the assigned task. This would include someone who was engrosed in taking apart a ballpoint pen, repeatedly taking off and putting on a coat or sweater, excessive combing or brushing of hair, etc. It would not include normal shifting of weight, tipping back on to the back legs of a chair during listening activity, etc. The criterion is whether that much fidgeting would normally interfere to attending to the assigned task.

9) Ø = other off-task behavior: any behavior which is clearly off-task and yet does not fit into one of the above categories. If a teacher directly reprimands a child, it should be included in this category. Whenever Ø occurs, there should be an explanatory note in Column III.

10) / = no off-task behavior: this occurs anytime that there is no off-task behavior during the 20-second observation period.

11) (H) = hostile, angry, resentful, negativistic or defiant behavior: this symbol can <u>only</u> occur in conjunction with one of the other off-task symbols. It would occur with another symbol when the action which that symbol denotes was obviously hostile, angry, resentful, negativistic, or defiant. For instance, if

a boy playfully throws something at another, he would receive a ⟶ ; if, however, he angrily throws something, he would receive a ⟶ (H).

General Guidelines

a) Each distinct off-task behavior should be rated during a 20-second observation period. It is entirely permissible to have more than one of any of the above symbols provided they apply to distinct behaviors or as provided in the case of n, v, and X in the above instructions.

b) What kind of a mark a person receives in Column I usually doesn't restrict what he gets in Column II. For instance, a person could be on-task for 18 seconds and then get out of his seat. In this case, he would get a + in Column I and an X in Column II. Of course, it is impossible to get a / in Column II if he gets a 0 in Column I.

Column III

Any explanatory notes that would make the rating given more clear or understandable should be noted in Column III. Also, if you are unsure what to do in a particular situation, rate it as best you can, make sufficient notes in Column III for you to remember the situation, and check it with your supervisor at a later time.

Appendix C
Evaluation Form Guide

1. Activity Level

    1. Extremely inactive and passive; placid, sluggish
    2.
    3.
    4. Normal amount of activity
    5.
    6.
    7. Extremely over-active and restless; can't sit still; impulsive activity

2. Nature of Activity

    1. Extremely rigid; unable to shift activity or approach to task
    2.
    3.
    4. Flexible behavior patterns; activity appropriate to different situations
    5. Distractible - usually engaged in relevant activity
    6. Distractible - often engaged in irrelevant activity
    7. Easily distracted, shifts unnecessarily from task

3. Attention Span

    1. Spends extreme amount of time on tasks
    2.
    3.
    4. Spends adequate amount of time on tasks
    5.
    6.
    7. Attends to tasks very briefly

4. Verbal Communication

    1. Little or no verbal communication
    2.
    3. Responses confined to answering directed questions
    4. Readily answers questions; may elaborate responses
    5. Talks a lot - usually relevant
    6. Talks a lot - often irrelevant
    7. Constant chatter makes it difficult to follow child's thinking

5. Cooperation

    1. Extremely suggestible and conforming
    2.
    3.
    4. Cooperative with reasonable amount of discomfort and anxiety
    5.
    6.
    7. Extremely negative

6. Hostility

    1. Ingratiating child, apple polisher
    2.
    3.
    4. No unusual amount of hostility shown

5.
6. Very hostile, obstructive
7. Explosive, uncontrolled behavior

7. Frustration Tolerance

1. Withdraws completely
2.
3.
4. Attempts to cope with difficult situations
5.
6.
7. Extreme acting out behavior and/or crying

8. Dependency

1. Very self-reliant; refuses help
2.
3.
4. Dependent in appropriate situations
5.
6.
7. Constant need for attention or help

9. Attitude toward work

1. Wants perfection, not easily satisfied; erases excessively
2.
3.
4. Realistic in evaluation; changes work only when inadequate
5.
6.
7. Satisfied with poor, inadequate, sloppy work

10. Goal Persistence

1. Compulsively absorbed with task
2.
3.
4. Able to keep goal or direction in mind
5.
6.
7. No effort to reach goal

11. Attention seeking (Consider "negative" devices such as silliness in verbal or nonverbal behavior, excessive requests or questions, showing off, crying, hiding, playing sick, etc.

1. Makes no use of such devices
2.
3.
4. Occasionally uses such devices
5.
6.
7. Extreme use of attention-seeking device so as to greatly hinder task work

Describe device used ______________________________

Daily Evaluation Form

Name ______________________
School ______________________
Date ______________________
Lesson # ______________________
Teacher ______________________

Use a ( ) to indicate level unless behavior for cognitive and social work differ, then indicate C or S where appropriate.

	1	2	3	4	5	6	7
1. Activity Level							
2. Nature of Activity							
3. Attention Span							
4. Verbal Communication							
5. Cooperation							
6. Hostility							
7. Frustration Tolerance							
8. Dependency							
9. Attitude toward Work							
10. Goal Persistence							
11. Attention Seeking							

Describe device used

____

____

Child's Name ______________________________ Date ____________

School ____________________ Teacher ________________ Grade __________

DIRECTIONS: Below you will find statements often used by teachers to describe children's behavior. First read each statement and decide if it describes the child being rated at this time. If it does, put a ✓ in the column under TRUE. If not, put a check (✓) under FALSE. Secondly consider whether you think there has been any change in the behavior since Christmas vacation. Put a check in the column "No Change", "Worse" or "Improved" which you think best describes this child since Christmas vacation.

NOTE: It is important to mark EACH statement. If you are in doubt, check the answer which is most correct.

	True	False	No Change	Worse	Improved
2. Tends to give up if has something hard to finish.					
3. Interrupts whoever is speaking					
5. Starts fighting over nothing					
6. Is a helpful child					
7. Is alert in class					
8. Poorly coordinated when doing things with hands, such as coloring or pencil work.					
11. Acts up when adults not watching					
12. Volunteers to recite in class					
13. Hits and pushes other children					
15. Finds fault with what other children do					
16. Approaches a difficult task with an air of defeatism.					
17. Is considerate of others					
18. Fails to carry out tasks (Homework assignments, seat work, etc.)					
19. Lacks ambition to do well in school					
20. Does things to get others angry.					
21. Will put up an argument when told not to do something.					
22. Does homework					
23. Teases other children					
25. Is bossy with other children					

	True	False	No Change	Worse	Improv
27. Is sure of self					
28. Uses abusive language toward other children					
29. Has changeable moods					
33. Seems to be off in own world					
34. Is infuriated by any form of discipline					
35. Likes an audience all the time					
36. Finds it hard to study					
37. Has to have everything own way					
38. Works well alone					
39. When angry, will refuse to speak to anyone					
40. School performance is far below capabilities					
43. Seems dull; slow to catch on					
44. Will not ask questions even when unsure as to how to do the work					
45. Fights back if another child has been asking for it					
46. Never seems to be still for a moment					
47. Argues with me					
48. Is able to concentrate on things.					
49. Boasts of own toughness					
51. Tries to be the center of attention					
52. "Drags feet" when requested to do something.					
53. Accepts adult suggestions					
54. Sulks when things go wrong					
56. Resents even the most gentle criticism of work					
57. Distractible; can't concentrate					
58. Able to see the bright side of things.					
59. Fights with smaller children.					

	True	False	No Change	Worse	Improve
64. Is interested in schoolwork					
65. Tries to get other children into trouble					
66. Does things just to attract attention					
69. Is popular with his classmates					
70. Does things which are normal for children much younger					
72. Threatens to hurt other children when angry					
76. Finishes classroom assignments					
77. Gives other children dirty looks					
78. Deliberately interrupts what is going on by asking silly questions					
81. Finds fault with instructions given by adults					
82. Seems unconcerned when misbehaving					
85. Is self-confident					
86. When angry, will do things like slamming the door or banging the desk					
87. Acts in a "dare-devil", fearless manner					
89. Has a "chip on shoulder"					
91. Bright, but doesn't apply self (under-achiever)					
92. Disturbs other children with boisterous behavior					
62. Is stubborn					

Appendix E: Letters to parents and consent forms used in various aspects of project

(Chapters VI, IX, X)

Dear Parent:

Doctor Bonnie Camp from the University of Colorado Medical Center is going to be studying ways that young children use language in learning self-discipline. As part of this study, she needs children to participate in several tests of language and learning skills. These studies will be performed in school or in a mobile testing van parked near your child's school. At the end of the tests, each child will receive a small reward for his cooperation. Results of testing will be made available to the school but will not be released to any agency or person without your written consent.

Would you be willing for your child to participate in this study? Your help and cooperation will be greatly appreciated.

Bonnie W. Camp

Bonnie W. Camp, M.D.
Assistant Professor
Pediatrics and Psychiatry

Date____________

I give permission for ____________________________ to participate in Doctor Camp's tests of language and learning skills.

Signed____________________________

Home Address________________________

____

Phone____________________

Child's School ______________________

Consent Form B

(Chapter XI)

Date________________________

Dear________________________;

Dr. Bonnie Camp from the University of Colorado Medical Center is preparing a continuation of her study of learning and self-control in young children. This phase of the project will involve a 15-20 minute training session each day for 1-2 months to help children improve their ability to cope with difficult tasks by "thinking out loud." The children selected for this program will work with an assistant from Dr. Camp's office or with a special teacher at school. Time away from regular class will be arranged to fit the classroom schedule most appropriately. Materials will include pictures, puzzles, games, activities and social situations commonly encountered in the primary grades. The training will give the children techniques for reaching a solution to several types of problems and tasks that will hopefully carry over into the classroom. At the end of the two months, children will receive a short group of tests to determine their progress. Information will also be obtained from teachers regarding the child's behavior in the classroom. Results of training and testing will be made available to the school and to the parents on request but will not be released to any agency or person without your written consent.

There are no anticipated risks, discomforts or inconveniences with this program other than the need to take time away from regular class. We would very much like to be able to include your child in this program beginning in April 1975. If you have any questions at all, please feel free to call me at 394-7178. Thank you for your help and cooperation.

Sincerely yours,

Bonnie W. Camp

Bonnie W. Camp, Ph.D., M.D.
Associate Professor of Pediatrics and Psychiatry

Date________________________

I give permission for ____________________________________ to participate in Dr. Camp's "Think Aloud" training program.

Signed____________________________

Address____________________________

____

Phone________________________

Consent Form G

Date:

Dear Parent:

We appreciated your willingness to allow ____________________ to participate in our study of how children learn self-control. At this time we are interested in knowing how much children change on some of our tests in the process of growing a few months older.

Your child is one of a few children we have selected at random to repeat a few of our tests along with a test of empathy or ability to recognize how other children may feel in some common situations. Testing will involve a total of approximately one hour. No additional inconveniences are anticipated. Results will be made available to the child's school and parents on request but will not be released to any agency or person without your written consent.

Please feel free to call me at 394-7178 if you have any questions. Your help and cooperation are greatly appreciated.

Bonnie W. Camp, M.D., [illegible]
Assoicate Professor of Pediatrics
and Psychiatry

Date ____________________

I give permission for ____

to participate in Dr. Camp's retesting program.

Signed ________________________________

Address ________________________________

____

Phone ________________________________

Consent Form F

Date ____________________

Dear Parent:

Dr. Bonnie Camp from the University of Colorado Medical Center is preparing a continuation of her study on learning self control in young children. This phase of the project will involve participation in approximately 2 hours of individual testing followed by assignment to a special instruction program for 30 minutes of instruction each day for 6-8 weeks. Additional testing and observation will then follow completion of the training program. Information will also be obtained from teachers regarding the child's behavior in the classroom before and after training.

The "Think Aloud" program is designed to help children cope with difficult tasks by planning and thinking through different ways to solve problems. It is called "Think Aloud" because the child first learns how to plan by "thinking out loud". Materials will include pictures, puzzles, games, activities and social situations which children have found enjoyable and which are commonly encountered in the primary grades. We believe this program will help children to improve their behavior at school and their achievement.

We are interested in finding out how helpful the "Think Aloud" program can be to children who are having behavior problems in school. Consequently we have asked the staff at your child's school to contact parents of children who might be candidates for this program. Final selection for participation in the program will be made by our project staff after we have received names of children whose parents have given permission for them to be included. However, not all children selected for the program will be able to enter the program immediately. All children will be tested and the first ones to get the program will be picked at random. At the end of 8 weeks, all children will be retested and those who did not get the program at first will enter training. At the end of their training, children in the second training group will be re-evaluated again. Results of testing and training will be made available to the school and to the parents on request but will not be released to any agency or person without your written consent.

There are no anticipated risks, discomforts or inconveniences with this program other than the need to take time away from regular class. We are asking your permission for your child to participate in this program. If he is selected, we will notify you as each phase of the program begins. If you have any questions at all, please call me at 394-7178. Your consideration of our request is greatly appreciated and we thank you in advance for your help and cooperation.

Sincerely yours,

Bonnie W. Camp

Bonnie W. Camp, M.D., Ph.D.
Associate Professor of Pediatrics & Psychiatry

Consent Form H

PARENT PERMISSION FOR "THINK ALOUD" PROGRAM

Date ______________________

I give my permission for ______________________________ to participate in Dr. Camp's testing and in the "Think Aloud" training program. I understand that final selection for this program will include teacher reports of classroom behavior problems. I also understand that children will be randomly assigned to receive the program immediately or to wait 8 weeks. If he is selected for the project, I will be notified as each phase of the project begins and may withdraw him from project participation at any time.

____
Signature of Parent or Guardian

____
Address

____
Telephone

H

(continued)

(Chapter XIII) Date ____________

Dear Parent:

Dr. Bonnie Camp from the University of Colorado Medical Center is seeking your participation in the continuation of her study on learning self-control in young children. Two training programs have been developed in this project to assist children in improving their achievement and their behavior in the classroom. Dr. Camp is now interested in determining which program will be most helpful to children who are having behavior problems in school.

We have asked the staff at your child's school to contact parents of children who might be candidates for these programs. Final selection for participation in the program will be made by our project staff after we have received names of children whose parents have given permission for them to be included.

Each child will first receive approximately one hour of tests dealing with his vocabulary, reading, ability to copy designs and solve puzzles, and ability to follow commands. Then we will assign children randomly to the "Think Aloud" or the "Great Expectations" Programs. Each program will run for one half hour each day for eight weeks during school. Two children will work with each instructor and both programs will use materials such as pictures, puzzles, games, activities and social situations which children have found enjoyable and which are commonly encountered in the primary grades. The way these materials are used will, however, be different in the two programs.

Information will be obtained from teachers regarding the child's behavior in the classroom before, during and after training. At the end of the eight weeks, children will be retested to determine improvement. Results of testing and training will be made available to the school and to the parents on request but will not be released to any agency or person without your written consent.

There are no anticipated risks, discomforts or inconveniences with this program other than the need to take time away from regular class. We are asking your permission for your child to participate in this program. If he is selected, we will notify you as each phase of the program begins. If you have any questions at all, please call me at 394-7178. Your consideration of our request is greatly appreciated and we thank you in advance for your help and cooperation.

Sincerely yours,

Bonnie W. Camp

Bonnie W. Camp, M.D., Ph.D.
Associate Professor of Pediatrics & Psychiatry

Consent Form I

PARENT PERMISSION FOR DR. CAMP'S PROGRAMS

DATE ________________________

I give my permission for __________________________________ to participate in one of Dr. Camp's programs. I understand that final selection for participation will include teacher reports of classroom behavior problems. I also understand that children will be randomly assigned to receive either the "Think Aloud" or the "Great Expectations" program. If he is selected for the project, I will be notified as each phase of the project begins and may withdraw him at any time.

____
Signature of Parent or Guardian

____
Address

____
Telephone

I (continued)

Appendix F

PPA Fidelity to Think Aloud

Think Aloud Teacher Evaluation

Teacher ____________

School ____________

Date ____________

Evaluator

1. Preparedness

    1. Faltering use of script and manipulation of materials, time lags.
    2. general disorganization
    3. read script prior to session but still shaky
    4. materials ready ahead of time, fluency with script.

2. Fidelity to script

    1. Ignores script
    2. omits parts of suggested script
    3. allegiance to script concepts
    4. adheres to script faithfully

3. Enthusiasm

    1. boring
    2. tolerably dry use of script
    3. charming except when using script
    4. interesting and responsive to children

4. Insistence on having things teacher's way: Example sit still, don't touch ________.

    1. Dictator
    2. Idle threats used to stop off-task behaviors
    3. Inconsistent
    4. Tolerant, discriminates what is interfering behavior

Evaluation of Think Aloud Program

Please respond to the following categories as a teacher using the Think Aloud program but not as a research assistant feeding us data. Later you may repond as a research assistant.

1. Satisfaction with the Think Aloud program

    1. very frustrating
    2. average - nothing significantly new
    3. satisfying
    4. enjoyable

2. List any child who is not responding to Think Aloud. Briefly describe why you think the program does not suit him.

3. Clarity of the Think Aloud manual:

    1. impossible to follow
    2. difficult to follow
    3. adequate - no threat
    4. clear, well-organized

4. Helpfulness of weekly group sessions

    1. Useless, wasted time
    2. Occasional assistance
    3. Helpful, supportive, informative
    4. Essential

5. Helpfulness of school visits

    1. Useless, wasted time
    2. Occasional assistance
    3. Helpful, supportive, informative
    4. Essential

Now include your role as a novice research assistant.

6. Estimate the average amount of time Think Aloud consumes of your day.

7. Clarity of recording forms

   1. impossible to use
   2. difficult to use
   3. no threat
   4. clear, well-organized

8. If you choose to use the program on your own would you choose to use any of the recording forms?

   1. no
   2. some
   3. yes

9. If offered participation in a research project several years hence, would you get involved?

   1. no
   2. yes

Appendix G

GREAT
EXPECTATIONS
PROGRAM
MANUAL

Bonnie W. Camp
Margaret M. Simmons

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December 1975

GREAT EXPECTATIONS

Introduction

It is increasingly evident that a child's concept of himself as adequate or inadequate is closely tied to how well he performs the tasks and problems assigned to him. The child who performs poorly usually has a low opinion of himself. The child who has a low opinion of himself often fails to make a concerted effort to work through difficult problems in a thoughtful way. Rather, at the first sign of difficulty, a child with low self-esteem often tends to reject the task impulsively. Recent research has suggested that improving self-esteem may be a powerful force in determining how well the child achieves (Rappaport, M. M., & Rappaport, H. The other half of expectancy equation: Pygmalion. Journal of Educational Psychology, 1975, 67: 531-536) and possibly his resistance to temptation (Fry, P. S. Affect and resistance to temptation. Developmental Psychology, 1975, 11: 466-472).

It is generally agreed that self-esteem is increased by both success at an activity and approval from others. By age 6-7, however, the need for successful mastery of a problem becomes increasingly a necessary element in developing self-esteem whether social approval is forthcoming or not. Hence the general approach in Great Expectations is to present the children with activities which are challenging but surmountable and to couple this with frequent expression of the expectation that they are able to succeed in school and social activities as well. The previously mentioned work by Rappaport & Rappaport served as the major guide for developing this aspect of the program.

In previous work with young, aggressive boys, we found that reacting impulsively was a major problem. Other research has suggested that aggressive children may have less regard for themselves and consequently may be more defensive. As a result they may be more ready to take offense and respond impulsively and aggressively.

A training program directed at improving self-esteem would, therefore, seem to have potential benefits on both behavior and achievement. The intent of the Great Expectations program is to provide such an experience along with relaxation training to decrease tension.

Recent work in the area of relaxation training suggested that improvement in self-esteem might develop more readily in a relaxed and cheerful atmosphere. The program was consequently developed to introduce the child to a routine for relaxing and getting into a cheerful frame of mind before trying any other activity.

The plan of the training program unfolds by first introducing the children to relaxation and "thinking happy". Then as they are able to utilize cue cards to initiate these activities, they will be introduced to additional activities involving puzzles, games, mazes and stories. The adult will select these additional activities with the purpose in mind that the child should have a good chance of being successful. From these teacher-selected activities, the child may choose what he would like to work on for a given day. The adult also makes sure that she makes some "great expectations" comment at some point in each day's session and provides children with whatever help and instruction are needed.

Bonnie W. Camp
Margaret M. Simmons

December 1975

DAY 1 - Relaxation

After picking the children up from their classrooms, introduce yourself (you'll probably have to tell them your name several different times for them to remember) and begin a pleasant conversation with the children. As you are walking to your working area you might allow each child to tell you his favorite thing to do or what he enjoys most.

Upon entering the room, tell the children you know they are good at imagining things; and that you'd like them to do some imagining with you today. Be sure you know they understand what imagine means. If they can't tell you approximately what it means, you might use something like this:

Adult: NO (or KIND OF). IMAGINE MEANS WE CAN PRETEND THINGS, OR WE CAN GET A PICTURE OF SOMETHING IN OUR HEAD. Then proceed.

Adult: LET'S IMAGINE YOU'RE ON YOUR WAY TO A MOVIE AND HAVE 3 MORE BLOCKS TO GO BEFORE YOU GET THERE. IT'S IMPORTANT TO SEE THE BEGINNING OF THIS MOVIE AND THERE ARE ONLY 3 MORE MINUTES BEFORE IT STARTS. YOU'D BETTER START RUNNING. (Dramatize and exaggerate to help establish ideas.) OH, RUN, RUN! WITH JUST A HALF MINUTE TO GO, YOU BUY THE TICKET,

(Act it out, panting) FIND A SEAT, AND FLOP DOWN JUST AS THE LIGHTS START TO GET DIM. HOW DO YOU FEEL FROM RUNNING SO HARD?

Children: _______________

Adult: THAT'S RIGHT, TIRED!

Adult: IF I COULD PICK UP YOUR ARM OR LEG, WHAT WOULD IT BE LIKE?

Children: _______________ (limp, floppy, etc.)

Adult: SHOW ME. (Take one of child's arm and see if he can let it drop upon releasing it.)

If this idea is not grasped, dramatize with the children again the running aspect. Emphasize the physical exertion. Flop into chairs, then let the children lift and release your arm.

Adult: HOW DOES IT FEEL TO SIT DOWN AND LET YOUR MUSCLES REST?

Children: _______________

Adult: LET'S IMAGINE SOMETHING ELSE. STAND UP. WE'LL BE OLD RAGGEDY ANDY DOLLS. HOW DOES A RAGGEDY ANDY'S ARM FEEL IF YOU PICK IT UP?

Children: _______________ (loose, floppy)

Adult: LET'S MAKE ONE ARM THAT WAY. SHAKE IT LOOSE. (Participate with children.) NOW LET'S SHAKE THE OTHER ARM. HOW ABOUT YOUR NECK? (Continue slowly shaking with a bobbing effect.) NOW A LEG. AND THE OTHER LEG. OH THAT'S GOOD. WE'D BETTER SIT

DOWN TO HOLD OURSELVES UP. (If possible sit on floor against something to hold your head up.)

Adult: NOW LET'S CHECK AND SEE HOW RAGGEDY THESE OLD RAGGEDY ANDYS ARE. (Check each child by lifting an arm, leg, or pushing the head lightly. If they are not relaxed, have them check you. Then repeat with them saying, OH RAGGEDY, MORE RAGGEDY, MORE!) When appropriate say OH, THAT'S GOOD or THAT'S REALLY RAGGEDY!

Adult: I BROUGHT ALONG A TIGER PICTURE TO HELP US REMEMBER THAT EACH DAY THE FIRST THING WE NEED TO DO IS BE LIKE A RAGGEDY ANDY DOLL.

Show picture of relaxed tiger and say, OUR TIGER REMINDS US TO RELAX. Point to word.

Adult: WHAT DOES HE REMIND US TO DO?

Children: ______________ (relax)

Adult: LET'S TRY IT ONE MORE TIME. (Begin standing up.) LET'S RELAX OUR HEAD AND NECK FIRST. (Let it bob forward.) NOW OUR SHOULDERS TOO. (Each part is added slowly, quietly.) BACK. ARMS. HANDS. FINGERS. LEGS. FEET. TOES.

HOW ABOUT SITTING DOWN IN A CHAIR AND TRYING IT. HEAD. NECK. ARMS. WRISTS. HANDS. FINGERS. LEGS. KNEES. FEET. TOES.

GOOD, YOU CAN REALLY RELAX LIKE OUR TIGER.

If time permits, allow children to color picture of boy in sleeping bag looking at stars. They may take picture (finished or not) with them.

DAY 2 - Think Happy

Adult: DO YOU REMEMBER WHAT WE DID TOGETHER YESTERDAY?

Children: ________________

Adult: YES (or help them recall), WE LEARNED WHAT THIS TIGER REMINDS US TO DO. HE TELLS US TO RELAX. WHAT DOES HE TELL US?

Children: ________________

Adult: LET'S TRY IT ANOTHER WAY. SIT COMFORTABLY ON YOUR CHAIR. CLOSE YOUR EYES BECAUSE WE ARE GOING TO IMAGINE WE'RE SOMEWHERE ELSE. EYES CLOSED? GOOD.

Adult: (Use a soft voice.) TODAY WE ARE RIDING ON A CLOUD. THE CLOUD FEELS SO SOFT. LET YOUR ARMS HANG DOWN SO YOUR HAND SINKS DOWN IN THE CLOUD. LET YOUR FEET SINK DOWN. WIGGLE YOUR TOES A LITTLE BIT. HOW ABOUT YOUR SHOULDERS -- THEY'RE SINKING TOO. NOW LET'S START AT THE TOP. EYES CLOSED, WE'RE STILL ON THAT BIG PUFFY CLOUD. EACH TIME I SAY A PART, LET IT SINK DEEP INTO THAT SOFT CLOUD. (Very slowly, quietly proceed - adding LET IT SINK WAY DOWN when necessary.) HEAD - NECK - SHOULDERS - ARMS - FINGERS. WIGGLE YOUR FINGERS JUST A LITTLE. BACK - LEGS - KNEES - FEET - TOES - JUST A LITTLE WIGGLE. GOOD - RELAX.

Adult: NOW YOU CAN OPEN YOUR EYES. WE'VE RELAXED DIFFERENT WAYS. WE IMAGINED ONCE WE WERE RUNNING HARD, THEN

PLOPPED DOWN IN A CHAIR. ANOTHER TIME WE PRETENDED TO BE RAGGEDY ANDY DOLLS. AND TODAY WE FLOATED ON A CLOUD. WHICH WAY DO YOU LIKE TO PRETEND SO YOU CAN RELAX? (Child one's name ________?)

Child 1: ________________

Adult: (Child two's name ____________?)

Child 2: ________________

The following part begins the think happy training. As the child tells about his happy time, look at him directly, making eye contact for much of his story.

Adult: NOW I WANT YOU TO THINK OF SOMETHING ELSE. DON'T TELL ME ANYTHING AT FIRST, JUST THINK. WE'LL TALK IN A LITTLE BIT.

THINK OF A TIME WHEN YOU WERE VERY HAPPY. WHAT WERE YOU DOING? (DON'T TALK YET.) WHO WAS WITH YOU? WHERE WERE YOU? JUST THINK. GOOD. NOW ONE AT A TIME TELL US WHAT YOU WERE THINKING OF. LOOK AT US AND TELL US.

(Child 2) WHAT WAS YOUR HAPPY TIME?

Child 2: ________________

Adult: Don't let child go on indefinitely, help him wrap up incident if necessary.

Adult: OH I CAN TELL YOU FELT REALLY HAPPY WHEN ____________ (briefly name child's incident.)

Adult: (Child 1), TELL US ABOUT YOUR HAPPY TIME.

Child 1: ________________

Adult: IT MAKES ME HAPPY TO HEAR ABOUT THE TIME YOU ___________.

Adult: NOW I WANT YOU BOTH TO LOOK AT ME. (Continue alternating eye contact between boys.) I'M GOING TO TELL YOU ABOUT SOMETHING AND I WANT YOU TO IMAGINE BEING THERE. THINK OF HOW YOU WOULD FEEL. READY? DON'T TALK, JUST IMAGINE. (The following 4 incidents are suggestions.)

Adult: YOU ARE AT ELITCH'S OR LAKESIDE AND YOU ARE JUST GETTING READY TO SIT DOWN IN YOUR FAVORITE RIDE. ARE YOU IMAGINING IT? LET ME SEE BY THE LOOK ON YOUR FACE HOW YOU WOULD FEEL.

Adult: HERE'S ANOTHER ONE. YOU'RE AT THE CIRCUS AND ARE SITTING REALLY CLOSE TO THE RING. A FUNNY CLOWN IS COMING TOWARD YOU. HE'S SITTING ON YOUR LAP! NOW HE'S PATTING YOUR HEAD. HOW DO YOU FEEL (Child 1)?

Adult: YOU'RE IN YOUR CLASS. THE TEACHER IS SAYING, 'YESTERDAY WE WORKED ON SOME HARD MATH PROBLEMS. I CHECKED YOUR PAPERS AND ONE OF YOU DID VERY WELL AND HAD A FINE PAPER. LET ME SHOW YOU IT.' THEN SHE SHOWS YOUR PAPER TO THE WHOLE CLASS! HOW DOES THAT MAKE YOU FEEL (Child 2)?

Adult: (Child 1)?

Adult: LET'S PRETEND IT'S A SATURDAY MORNING NOW, COLD AND RAINY OUTSIDE. YOU'VE BEEN PLAYING IN THE LIVING ROOM, AND IT'S REALLY A MESS. YOUR MOTHER IS JUST LEAVING TO GO TO THE STORE. SHE SEES THE MESS AND LOOKS SAD BUT DOESN'T SAY ANYTHING. NOW SHE GOES TO THE STORE. AS SOON AS SHE'S GONE YOU START PICKING UP THE LIVING ROOM MESS. IT TAKES A LITTLE WHILE, BUT WHEN YOU ARE DONE IT LOOKS BETTER THAN IT HAS IN A LONG TIME. YOU DID A REALLY GOOD JOB. IN FACT YOU EVEN PICKED UP YOUR OWN ROOM! NOW TO WAIT FOR MOM TO COME HOME. YOU HEAR HER AND RUN TO HELP CARRY THE GROCERIES IN. MOTHER COMES IN, SEES THE CLEAN ROOM RIGHT AWAY. 'OH! THAT'S THE NICEST THING THAT COULD HAPPEN TO ME TODAY', SHE SAYS. AND SHE GIVES YOU A BIG HUG. HOW DO YOU FEEL (Child 1)?

Adult: (Child 2)?

Show Think Happy cue card.

Adult: WHAT DOES OUR TIGER REMIND US TO DO NOW?

Children: ________________

Adult: YES, THINK HAPPY!

Adult: If time permits, you may play a game in which happiness or laughter takes a part. The following are offered as suggestions.

I Poor Kitty

One person (the adult) is kitty first. She (he) is to act like a kitty, purring and rubbing against a child. The more dramatic "kitty" is the better. The child is to pet and console "kitty" slowly saying, "Poor kitty" three times. If child giggles, laughs, or smiles broadly, he becomes the new "kitty". If "kitty" can't get child to laugh, he tries another child. It is quite all right for the child who is not petting "kitty" to laugh and try to get other child to laugh.

II Silent Meeting

Members of group sit in circle. One person (adult) states "The Silent Meeting has begun, no laughing, talking, or chewing gum." Members look at each other - trying to get someone to laugh. If above rules are broken, that member is out or meeting is over.

III Faces

"It" tries to get someone else to laugh by making a funny face.

DAY 3

Day 3 begins with a review of Relaxation and Think Happy. Again, do not rush the relaxation.

Adult: WHO REMEMBERS WHAT WE DO FIRST EVERY DAY?

Child: ________________

Adult: THAT'S RIGHT, WE RELAX.

LET'S STAND UP AND STRETCH REALLY BIG. ARMS WAY UP. STRETCH. NOW LET YOUR ARMS DOWN AND RELAX. AGAIN STRETCH. RELAX.

Adult: NOW LET'S SIT DOWN. STRETCH OUT YOUR LEGS. WAY OUT. NOW RELAX. POINT YOUR TOES, REALLY HARD. NOW RELAX. DO IT AGAIN. NOW POINT YOUR TOES UP AND PUSH YOUR HEEL DOWN. REALLY STRETCH. NOW RELAX. AGAIN STRETCH AND RELAX. NOW TRY YOUR SHOULDER. PUSH THEM UP, NOW DOWN, UP AND DOWN. RELAX. STRETCH YOUR FINGERS WAY OUT AND RELAX. AGAIN. CLOSE YOUR EYES TIGHT AND RELAX. NOW RELAX ALL OVER. THAT'S GOOD.

Adult: WHO REMEMBERS WHAT WE LEARNED YESTERDAY? OUR TIGER HELPS US REMEMBER TO RELAX AND TO ____________?

Child: ________________

Adult: THINK HAPPY.

Adult: WHAT HAPPY THING HAPPENED TO YOU (yesterday or today) (Child 1)?

Child 1: ________________

Adult: WHAT FUN! (or an appropriate comment.)

(Child 2) WHAT HAPPENED TO YOU THAT MADE YOU FEEL HAPPY?

Child 2: ________________

Adult: (Appropriate comment.)

Adult: DID YOU MAKE SOMEONE ELSE HAPPY? WHAT DID YOU DO?

Child 1: ________________

Child 2: ________________

Adult: THINKING HAPPY IS FUN. SOMETIME WE CAN MAKE UP HAPPY STORIES.

Adult: LET'S TRY SOME THINGS. SELECT AN ACTIVITY TO WORK ON.

Daily Guidelines

The following sections are to be used after Day 3.

Eacy day should begin with some <u>relaxation</u>. The procedures already introduced may be used again, or select from the following ideas. You may use ideas of your own. Be sure procedure is not only discussed, but that relaxation is practiced.

1. Ask children how they could relax when they want to, if they are still supposed to stay in their chairs. (YOU'VE BEEN WORKING ON MATH VERY HARD AND ARE TIRED, BUT THERE'S STILL MORE TIME FOR MATH. HOW CAN YOU RELAX?)

2. Ask child how he might relax during seat work reading time, if he has his work all done.

3. IF YOU'VE BEEN RIDING IN A CAR OR BUS A LONG TIME, HOW CAN YOU RELAX IF THERE'S STILL MORE TIME TO RIDE?

4. HOW CAN YOU RELAX IF YOU'VE BEEN STANDING IN LINE A LONG TIME - LIKE A LINE FOR A MOVIE?

5. IF YOU'VE BEEN WATCHING T.V. TOO LONG, HOW CAN YOU RELAX?

6. IF YOU'VE BEEN PLAYING ON THE PLAYGROUND VERY HARD, HOW CAN YOU RELAX?

7. Have child show you what he'd be like if he's fallen asleep in the car, and Daddy has to carry him into the house.

8. SOMETIMES WE HAVE TO TAKE LONG TESTS AT SCHOOL AND THE ROOM HAS TO BE VERY QUIET SO EVERYBODY CAN DO HIS BEST WORK. YOU'VE FINISHED THE PART OF THE TEST THAT YOU HAVE TO DO. TIME TO RELAX, BUT YOU HAVE TO BE QUIET BECAUSE MANY OTHER CHILDREN ARE STILL WORKING. HOW CAN YOU RELAX?

9. Ask the child what you are all going to do today to relax.

//

Following relaxation, some Thinking Happy should take place every day. Follow each "Happy" review with "HOW DO YOU FEEL WHEN YOU THINK OF THAT?" Or use a similar comment.

1. Make up a shared story. One person (adult) begins a story of his own making. She stops at some point (a point of great interest or suspense works best). Let a child take over the story telling, making up a part and stopping him to let

other child take over. Remind the children it is a HAPPY story, if necessary.

2. Read a happy story. Ask for the children's reactions. How does the story make them feel?

3. Ask if either child has heard a happy story. Have them tell the happy part.

4. Ask children to think about what you're saying. DON'T TALK YET, JUST THINK. IF YOU COULD DO ONE THING TO MAKE SOMEONE YOU KNOW REALLY HAPPY TODAY, WHAT WOULD YOU DO? Allow time for thoughts to develop, then have each child tell his thoughts. WHO ARE YOU MAKING HAPPY AND HOW ARE YOU DOING IT?

5. IF SOMETHING COULD HAPPEN TO YOU TODAY THAT WOULD MAKE YOU VERY HAPPY, WHAT WOULD IT BE?

6. IF YOU COULD GET A PRESENT TODAY OF SOMETHING YOU REALLY WANT, WHAT WOULD IT BE? HOW WOULD YOU FEEL?

7. DO YOU THINK (Christmas, Valentine's Day, Fourth of July, Halloween, Thanksgiving, Birthday) IS A HAPPY TIME? TELL US WHY THAT'S A HAPPY TIME.

Each day each child should have some feeling of success. Begin with easy activities. The children can then succeed and this allows you to decide the level of difficulty of materials to use later. Gradually activities can become more difficult, but anticipate the difficulty the child(ren) may encounter. By being an active participant in the puzzle, maze, or game you can help solve the problem in a less obvious way. Share in the evaluation, "HOW DID WE DO?" A cue card of the tiger looking at his painting asking "How did I do?" may be used to help child remember to evaluate his work.

Besides having some feeling of success daily, each child should hear at least one comment that would boost his self-esteem. The following remarks are of the type desired and may be used as well as any additional ones the adult finds appropriate.

A. Comments to praise a superior performance

1. You are really good at that.
2. I think that __________ is great (fine, nice).
3. Wow! That's fantastic.

B. Comments to build a feeling of exceptional talent.

1. You do that better than just about anybody.
2. Have you always been good at (puzzles, coloring, etc.)?

C. Comments to predict doing very well in school.

1. I know you will do very well in school (math, reading, spelling, etc.).
2. When you get back in your classroom things (or subject) will be easy for you.
3. I bet you'll be one of the best kids in (subject) in your room.

D. Comments to show that you (adult) will follow their progress.

1. I'll really be interested to see how you do in class.
2. Tomorrow I want you to tell me how you did in (reading, math).

Suggestions for Use of Materials

Decide upon and know the materials you will use before each day's lesson.

I. The Activity Fun Book has a variety of projects, games, and problems. The pages are perforated and can be removed. You will probably find that removing the pages for use one day and presenting only those pages allows you to control their use more effectively. Pages may be presented in any order. Some pages require cutting so be sure you have used the other side first, if you wish. Allow the children to use what they've made. Examples are: finger puppets can be used for a small puppet show, games that are assembled can be played. Keep the cut out cards or games to use again at a later time.

The following are some suggestions for specific pages in The Activity Fun Book:

1. The first six pages are related. They should be presented together, but may be colored on different days.

2. "Who Lives Here". Cut door and windows, mount on cardboard and let children show their own drawings in openings.

3. Mount A Surprise on cardboard so children can use it with family and friends.

4. Mount Shelf Dolls.

5. Finger Puppets can be made stronger for use by gluing to another sheet of paper.

6. Partner Mazes (rockets and pioneers) can be used twice (2 books). Let boys use other half on second day.

7. Mount Crazy Animal Cards.

II Books

When possible discuss parts that relate to any of the four cue cards. Supplement the supply of books with others from school or public libraries, books of your own, or ones the boys might like to bring to the lesson. Reread any stories at a later date that the children would like read again. Once stories have been read, have two or three available for the children to look at if they finish other activities for the day.

The following is a list of the books supplied and ideas for their use.

Mickey Mouse and the Second Wish lends itself to Think Happy. Mickey is happy with a wish that comes true, later disappointed, but finally happiest with a second wish. Mickey also Relaxes at the end.

Little Lulu and the Birthday Mystery can be related to Think Happy and any birthday discussions. Also Tubby is very good at doing something. "How did Tubby do?" might be used at the end of the story

Outside with Baby might be used to find out what is different from or the same as where we live. Also use, "What might make this child happy where he lives?"

How Big Is a Baby? After the story have them decide what the answer to the title question really is.

Surprise in the Barn. What makes the farmer and his wife happy? What animal baby would you like to take care of, play with, and watch grow? Why?

Farm ABC. Children might like making their own list of ABC's with your help. The full project could not be completed in one day. Write down their

words. Evaluate "How did we do?" when completed. "Do we have a big list?"

The Poky Little Puppy Follows His Nose Home. What could the Poky Little Puppy do well? There is a coloring picture of the Poky Little Puppy.

Hansel and Gretel. Share this classic with children anyway you wish. There are Think Happy parts.

Three Bed Time Stories. One story a day is enough.

Happy Golden ABC. Can children discover any unnamed ABC in pictures? (animal, arm, leg, etc.)

Wild Animals. After reading ask "What animals were in this story? What one did you like best?"

Ten Little Animals. Let children participate in the repetition. They can complete line "And now there are (number)."

III Card Games

Know the card games well before teaching them to the children. Make opportunities for the children to play card games they especially like on several occasions. The easiest games are Old Maid, Fish, and Slap Jack. Of a little more difficulty are Animal Rummy, Snap, and War. Finally Crazy Eights and Hearts are the most difficult.

Some decks lend themsleves to other games. Memory or Concentration can be played by making a new deck consisting of six (6) pairs of cards. The Fish, Slap Jack, Animal Rummy, Snap and War decks work well. The Old Maid deck can be used to increase the difficulty later. Cards are shuffled and placed face down in rows, such as three rows of four each. Each child takes a turn at showing two cards face up. If a match is made he keeps those two cards and takes another turn. If no match is made he turns the cards face down again. The object is to remember cards once they are face down again. As children improve, the number of pairs used can be increased.